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DECEMBER 7, 1944

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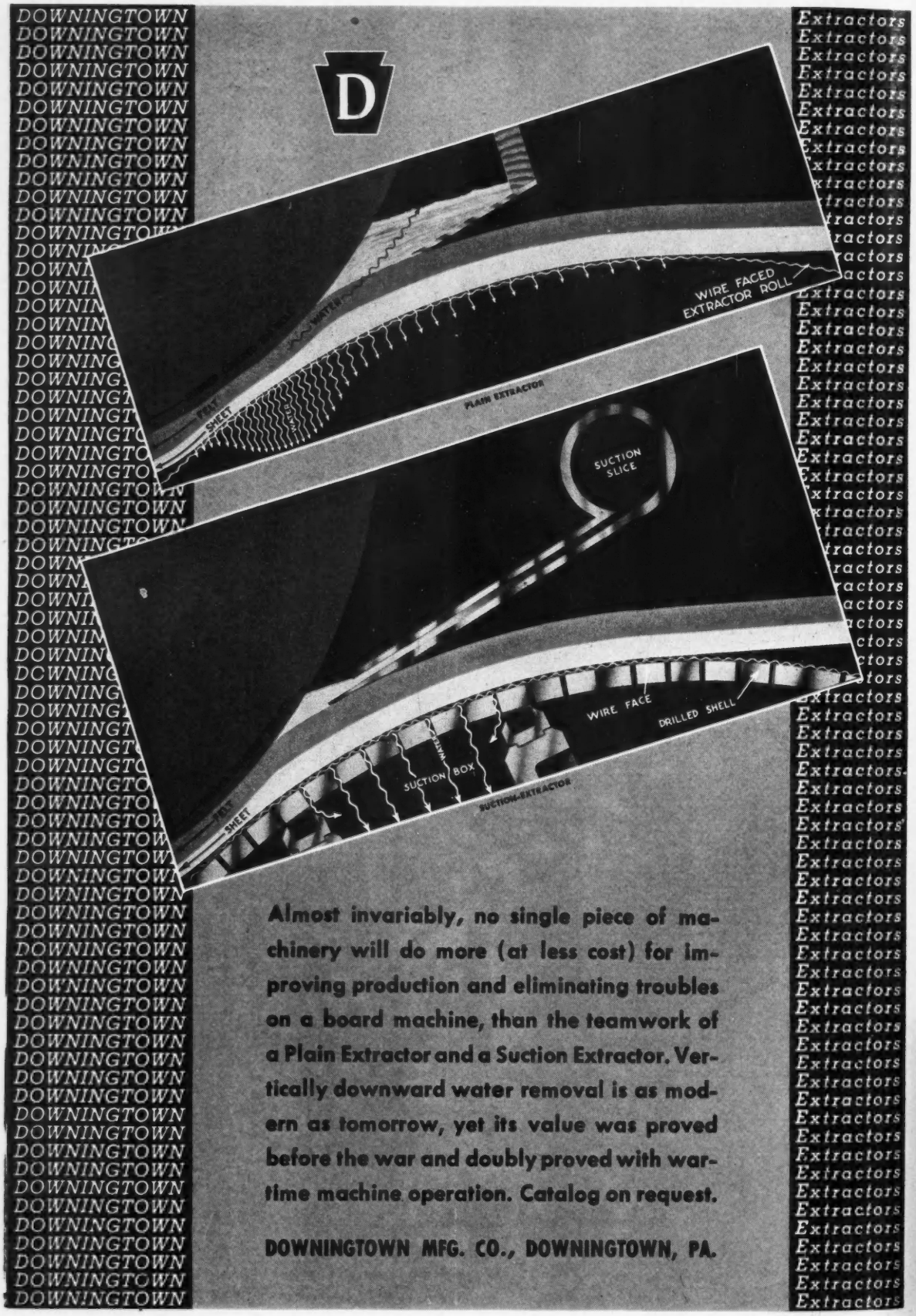

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Vol. 119, No. 23

PAPER TRADE JOURNAL

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December 7, 1944

Printing Committee Makes Paper Awards

Contracts Let On Monday For A Large Variety of Paper For Use of Government Printing Office For the Three Months' Period Beginning January 1—No Bids Received On Large Number of Items.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 4, 1944—Awards were made today by the Joint Congressional Committee on printing for paper for the use of the Government Printing Office for the three months' period beginning January 1. Bids were received on November 27. No bids were received on the following items: Nos. 18, 23, 24, 27, 29, 37, 39, 42, 43, 49, 50, 51, 52, 60, 62, 63, 64, 67, 69, 70, 72, 75, 77, 84, 85, 104, 111, 120, 121, 122, 123, 125, 126, 140, 160, 161, 168, 169, 201, 202, 211, 213, 217, 218, 252, 254, 265, 280, 281, 304, 308, 351, 352, 360, 367. The awards were as follows:

No. 1, Marquette Paper Corp., at ceiling price (600,000 pounds).

No. 2, Bermingham and Prosser Co., 5.38 cents.

No. 3, Barton, Duer and Koch Paper Co., 7.97 cents.

No. 4, Barton, Duer and Koch Paper Co., 7.89 cents.

No. 5, Marquette Paper Corp., 7.94 cents.

No. 6, Perkins-Goodwin Co., 6.98 cents.

No. 7, Perkins-Goodwin Co., 6.98 cents.

No. 8, Perkins-Goodwin Co., 6.98 cents.

No. 9, Perkins-Goodwin Co., 6.98 cents.

No. 10, Barton, Duer and Koch Paper Co., 7.40 cents (480,000 pounds).

No. 19, Central Ohio Paper Co., 9.27 cents (180,000 pounds); Paper Corp. of U. S., 9.26 cents (300,000 pounds).

No. 20, Central Ohio Paper Co., 8.13 cents (180,000 pounds).

No. 22, Barton, Duer and Koch Paper Co., 7.18 cents.

No. 26, Whitaker Paper Co., 14.93 cents.

No. 33, R. P. Andrews Paper Co., 7.69 cents.

No. 34, Mudge Paper Co., 7.33 cents (450,000 pounds); Central Ohio Paper Co., 7.31 cents (600,000 pounds); R. P. Andrews Paper Co., 7.33 cents (450,000 pounds).

No. 38, Barton, Duer and Koch Paper Co., 6.01 cents.

No. 41, Consolidated Water Power and Paper Co., 6.565 cents .

No. 44, Old Dominion Paper Co., 5.7498 cents (400,000 pounds); Marquette Paper Corp., 5.75 cents 400,000 pounds).

No. 45, Whitaker Paper Co., 7.17 cents (200,000 pounds); R. P. Andrews Paper Co., 7.24 cents (500,000 pounds).

No. 46, Cauthorne Paper Co., Inc., 8.35 cents.

No. 47, Old Dominion Paper Co., 9.37 cents.

No. 48, D. L. Ward Co., 12.79 cents.

No. 55, R. P. Andrews Paper Co., 7.82 cents (400,000 pounds); Marquette Paper Corp., 7.85 cents (400,000 pounds).

No. 56, Whitaker Paper Co., 7.44 cents (800,000 pounds); Barton, Duer and Koch Paper Co., 7.25 cents (500,000 pounds).

No. 57, R. P. Andrews Paper Co., 7.59 cents (400,000 pounds); Stanford Paper Co., 7.62 cents (550,000 pounds); Cauthorne Paper Co., Inc., 7.62 cents (550,000 pounds).

No. 58, R. P. Andrews Paper Co., 6.99 cents (400,000 pounds).

No. 59, Marquette Paper Corp., 8.54 cents (No. 32); 8.09 cents (No. 36)—800,000 pounds.

No. 65, Stanford Paper Co., 15.48 cents; 15.38 cents (100,000 pounds).

No. 66, Mudge Paper Co., 18.25 cents (No. 32); 17.75 cents (No. 40).

No. 68, Franklin Research Co., 19.425 cents (1,658,000 pounds); Barton, Duer and Koch Paper Co., 18.60 cents (250,000 pounds); Sanford Paper Co., 17.25 cents (92,000 pounds).

No. 71, Old Dominion Paper Co., 10.989 cents (100,000 pounds); Graham Paper Co., 9.90 cents (100,000 pounds).

No. 73, Graham Paper Co., 11.00 cents (100,000 pounds).

No. 76, Old Dominion Paper Co., 18.728 cents (50,000 pounds); Paper Corp. of U. S., 20.50 cents (50,000 pounds).

No. 78, Old Dominion Paper Co., 18.974 cents (50,000 pounds).

No. 101, Eastern Corp., 11.46 cents.

No. 102, Eastern Corp., 9.31 cents.

No. 103, Eastern Corp., 10.04 cents.

No. 105, Aetna Paper Co., 17.39 cents.

No. 106, Aetna Paper Co., 14.39 cents (650,000 pounds).

No. 107, Aetna Paper Co., 14.39 cents (650,000 pounds).

No. 108, Aetna Paper Co., 14.39 cents (700,000 pounds).

No. 109, Aetna Paper Co., 18.39 cents.

No. 110, Aetna Paper Co., 15.09 cents.

No. 128, Barton, Duer and Koch Paper Co., 23.90 cents.

No. 141, R. P. Andrews Paper Co., 28.03 cents.

No. 151, Wilcox-Walter-Furlong Paper Co., 8.65 cents.

No. 152, Wilcox-Walter-Furlong Paper Co., 8.65 cents.

No. 153, Wilcox-Walter-Furlong Paper Co., 8.15 cents.

No. 154, Aetna Paper Co., 14.39 cents (100,000 pounds).

(Continued on page 21)

Canada Eases Curb on Some Paper Exports

Forestry Products Include Paper and Paper Board But Excepts Paper Bags, Sanitary Papers and Cellophane—New Zealand Grows Pulpwood — Investment Status of Paper Industry — Other News.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., December 4, 1944—The Federal Government has announced the exemption of about 175 groups of commodities from the requirements of an export permit when shipped to Empire countries or the United States, effective on December 11. This includes, among a number of forestry products, such articles as paper and board manufactures, excepting facial tissues, sanitary pads, cellophane, toilet paper, paper towels and paper bags; and in articles under the heading "$100 value or less," paper and paper products, except waste paper; pulp boards, all kinds; sandpaper and other abrasive papers.

While these concessions mark some measure of relief to the pulp and paper industry in the lifting of restrictions and in the abolishing of some of the irksome formalities that have to be gone through, the importance of the announcement lies in the remarks of the Minister of Trade and Commerce in relation thereto, for he laid down the policy of the Government in regard to its future attitude in the matter of controls in general. Explaining that there would be further relaxation of export control restrictions "in the near future," he said that, while the present announcement pertained especially to goods exported to British countries and the United States, export permits would be issued freely, "generally speaking," on such commodities for other parts of the world. He also stated that he subscribed to the theory that, in regard to international trade, it was not the duty of the Government to regulate and control export trade in peace as well as in war.

"I believe," he said, "that the State should try to remove restrictions to trade and not to multiply them. I conceive it to be the function of government to use its best endeavors to supplement, rather than to replace, the efforts of Canadian exporters, and at all times to strive not for the enrichment of any one group, but for the growing prosperity of all Canadians, based upon an expanding volume of world trade." This has a particular bearing on the pulp and paper industry, since it is the largest export manufacturing industry in Canada.

Post-War Trade a Problem

Indicating one of the greatest problems that will confront after-war exporters, he said: "A great question mark hangs over the means that Britain will adopt to rectify her trading position, and Canada has a vital stake in the solution of this complicated problem, for Britain was Canada's best pre-war customer. I am confident of Britain's powers of economic recuperation and the reconstruction of Canadian trade with Britain must be one of the foremost and cardinal objectives of Canadian commercial policy. If the channels of trade are substantially cleared of artificial restrictions, and the total volume of world trade rises far above the pre-war level, as it inevitably must do if we are to meet the needs of the nations exhausted by the war, then Britain will again be a vibrant, progressive force as a supreme trading nation. One of the greatest single questions Canada has to face is that of determining how and to what extent Britain's Canadian dollar position can be strengthened. It seems as clear as the handwriting on the wall that our exports to the British market must depend, as never before, upon the size of the dollar fund which Britain obtains through the sale of British goods in Canada. I can assure you that whatever influence Canada possesses is and will be directed to that end."

New Zealand Grows Pulpwood

Some astonishing results of experiments in New Zealand in growing pulpwood from pine seeds imported from this country have been reported by S. J. Robinson, executive director of the Whakatane Paper Mills Limited, of New Zealand, who is visiting Canada to study methods here in preparation for the establishment in New Zealand of an industry for the production of printing and writing paper, which will necessarily mean also the production of chemical pulp, not only for the production of printing and writing papers but for boxboard as well, which the Whakatane Paper Mills have been producing for five years, chiefly from groundwood pulp they manufacture and chemical pulp they import.

"You must understand," said Mr. Robinson in an interview, "that in the North Island of New Zealand there is an area of approximately 750,000 acres of exotic trees, mostly Pinus Insignus, which have been planted over the last twenty-five years or even longer and are now very sizeable in those regions that were planted first, and these trees must be made use of. The growth is so fast in New Zealand that the areas planted by the Whakatane Paper Mills Ltd., at Matahina, only twelve years ago, are now being felled by our mill to produce groundwood pulp. These trees vary in size from six to sixteen inches in diameter and give a yield of 40 cords to the acre, the land being clear felled. These trees were originally planted 6′ 6″ apart, 1000 to the acre and probably within the twelve months the areas now being cut will be replanted with tiny trees from the nursery and in approximately twelve years time we expect to be able to come back to the same area again and get another 40 cords to the acre.

"It may be in future that New Zealand can most economically produce a chemical pulp for export and conditions would appear to be favorable, while in others such as transport costs, power, etc., New Zealand may not be so well situated. The wood itself can certainly be converted into a good grade of chemical pulp, either sulphite or sulphate."

Mr. Robinson has been greatly interested in the study of machinery used in the pulp and paper industry in this country. He was particularly impressed with the labor-saving aspect of light, portable power saws for felling trees, and himself helped to operate one.

Investment in Pulp and Paper Industry

Due to the outstanding interest being shown in the securities of the pulp and paper industry, in which

no fewer than 200,000 Canadians now have invested, the firm of Flood and Company, members of the Montreal and Toronto Stock Exchanges, have issued a booklet on the industry the foreword of which states that it is the company's considered opinion that the equities of the pulp and paper companies present the greatest possibility in Canada today for speculative investment, it being one of the few industries that can go from war to peace without a disruption of its earning capacity and with the prospect that the coming peace will enhance its possibilities.

Some remarkable figures regarding the improvement in the general position of the industry over recent years are given. Thus the booklet states that: "In the six-year period ended with or during 1943, fifteen leading companies increased their aggregate holdings of cash, government bonds, etc., from $8,266,000 to $50,588,000, a gain of 512%; increased their aggregate working capital from $29,651,000 to $96,385,000, a gain of 225%; reduced their aggregate bank loans from $21,899,000 to $3,534,000 a cut of 83.9%; reduced their aggregate funded debt from $168,532,000 to $130,913,000, a cut of 22.3%; increased their aggregate net earnings before depreciation, interest, taxes, etc., from $22,448,000 to $39,312,000, a gain of 75.1%.

"The fifteen companies listed in making up the above figures are: Bathurst, B. C. Pulp, Brompton, Consolidated Paper, Donnacona, Dryden, Fraser, Great Lakes Paper, Howard Smith, Lake St. John, Maclaren, M. & O. Paper, Price Brothers, Provincial Paper and St. Lawrence Paper."

Pulp and paper, it is stated, is Canada's greatest manufacturing industry. It leads in capital invested, in salaries and wages paid out, and ranks with gold as Canada's largest producer of dollar balances.

Important New By-Products

In connection with the new plant of Howard Smith Paper Mills for the production of lignin plastics by the use of lignin extracted from hitherto wasted sulphite liquor, officials of the company state that this lignin plastic will be unlike anything made elsewhere. They also state that their other venture in the production of an important byproduct from wood pulp, namely vanillin, used as a base for flavoring extracts, has proved so successful that a sufficient quantity for all Canada's requirements is now being produced, and in addition the company is able to ship a certain amount to the United Kingdom.

Ralph W. Remont Dies Suddenly

Ralph W. Remont, president of the St. Lawrence Paper Company, Inc., newsprint-mill agent, died Friday of last week in the lobby of the building at 342 Madison avenue, where the firm is located, after suffering a heart attack. He was sixty-four years old and lived at 10 Park avenue.

Mr. Remont was associated with the St, Lawrence Paper Mills, Ltd., of Three Rivers, Quebec, since 1929 as vice-president of its United States sales office, the St. Lawrence Sales Company, Ltd. When the latter company was incorporated in the United States in 1939 as the St. Lawrence Paper Company, Inc., he became its president.

Surviving are his wife, Mrs. Mabel L. Remont; two sisters, Mrs. Arthur Westergaard and Mrs. Paul Martel, both of Philadelphia, and a brother, Louis M. Remont, also of Philadelphia.

Paperboard Men Meet in New York

At the annual meeting of the National Paperboard Association at the Waldorf-Astoria Hotel, New York, N. Y., on November 16 and 17, 1944, the following officers were re-elected to serve for the ensuing year: President, W. Irving Osborne, Jr., president, Cornell Wood Products Company, Chicago, Ill.; vice- president, Jos. S. Miller, president, New Haven Pulp and Board Company, New Haven, Conn.; executive manager, Frederick G. Becker, 40 East 41st street, New York City and 80 East Jackson boulevard, Chicago, Ill.; secretary and treasurer, H. S. Adler, 80 East Jackson boulevard, Chicago, Ill.

David A. Sealey continues as secretary of the Eastern Division with office in New York City. Grafton Whiting continues as statistician and Alvin A. Newburg as assistant statistician with headquarters in Chicago.

Discussions were held regarding the operations of the industry, which during the past year have continued under controls from Washington; that is, production control of paperboard and its major raw materials by the War Production Board and selling prices under the control of the Office of Price Administration.

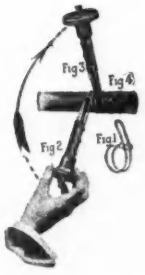
Throughout the session it was emphasized that the prime effort of the industry has been, and must continue to be, an all-out drive to produce the maximum tonnage of those grades of paperboard which are most essential to the war effort.

The production figures for the year to date definitely showed that the paperboard industry, although continuously confronted with a severe lack of manpower, pulp, waste paper and other raw material, has responded most energetically, working in conjunction with governmental agencies.

Statistics were presented showing that during the past three months paperboard production has averaged 155,200 tons per month, and it was stated that if this rate can be maintained through the remaining seven weeks of 1944, paperboard production this year will total 7,850,000 tons, a new all-time high, slightly exceeding the production of the previous high recorded for the year 1941.

Grip-Tight Hose Bands

The Grip-Tight hose band which is said to be "The best for all hose connections," is represented in the accompanying illustration. It may be used for water, air, steam, suction and all other kinds of hose and is said to be economical, easy to apply and amazingly effective. The Grip-Tight can be applied quickly right on the job without bringing the hose to the bench or vise. It makes a neat tight hose connection without any annoying projections to damage property when dragging the hose around, or to injure workmen. The Grip-Tight hose is made of special rust-proof galvanized steel wire for all sizes of hose from one-quarter to six inches in diameter. Only one size band is needed for each size of hose. It is not necessary to stock a large variety of sizes to fit various plys of hose. The Grip-Tight hose bands are made by the Erco Manufacturing Company, 4010 W. Montrose avenue, Chicago 41, Ill.



Labor Board Denies Labor Grade Increases

Proposed Advancement of Skilled Workers By Paper Mills Rejected On Ground That Present Rates Exceed Those of Industry In Area—Sangamon Paper Co. To Rebuild Mill—Other Late News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., December 4, 1944—The Sixth Regional War Labor Board in Chicago announced last week that it had denied proposed increases in labor grades for skilled occupations at Kimberly, Niagara and Appleton, Wis., mills of the Kimberly-Clark Corporation, Neenah, Wis. The decision was directed to the corporation and to Paper Mill Workers Union of Niagara and Kimberly and the Wall Paper Workers Union of the Fox River Valley at Appleton. The board said that the present rates already exceed stabilized rates for the industry and the area. A total of 410 workers were affected.

The board also denied a joint application of the Hoberg Paper Mills, Inc., Green Bay, Wis., and the Paper Mill Workers Union Local 57 for a 5-cent hourly general wage increase.

The National Labor Relations Board at Washington last Saturday, December 2, directed that an election be held among the employes of the George Banta Publishing Company, Menasha, Wis., to determine their representative for collective bargaining. Involved is the International Printing Pressmen and Assistants' Union of North America (AFL). The election must be held within 30 days.

The Sixth Regional board also recently denied a proposed 4-cent hourly increase to employes of the Northern Paper Mills, Green Bay, Wis. Six hundred and fifty employes were affected.

The International Brotherhood of Papermakers and the Pulp and Sulphite and Paper Mill Workers (AFL) will represent employes of the Northern Paper Mills, Green Bay, it was determined at a recent election.

John Strange Co. Erecting Storehouse

The John Strange Paper Company, Menasha, Wis., is building a $45,000 storehouse at the east end of the mill property at the rear of the company's other new building, a combination warehouse and office.

The storehouse, of steel and concrete, will house the company's supply of waste paper. The first story will be completed next year, with the remainder to be added after the war.

It is expected that the company, which has had temporary quarters since June when fire destroyed the old office and warehouse, will move into the new office building in February.

Speak on Employing Service Men

S. F. Shattuck, vice-president of the Kimberly-Clark Corporation, Neenah, Wis., and John Schiebler, personnel department superintendent at the Lakeview mill of the corporation were speakers Monday, December 4 at the meeting of the Neenah Club.

They outlined, through the use of charts, the program of reinstating permanent employes returning from the service in compliance with the 1940 Selective Service Act.

Neenah Paper Company, Neenah, Wis., which was awarded the original Army-Navy E for high achievement in the production of war materials on August 28, 1943, has been honored for the third time by the War Department, permitting it to add a second white star to the Army-Navy E banner which flies from the company's flagpole. The second award, the first white star, was made April 1, 1944. No special ceremonies are planned in connection with the award.

Sangamon Co. To Rebuild Mill

Sangamon Paper Company, Kaukauna, Wis., will rebuild the mill destroyed by fire early this year, T. J. Russell, mill superintendent, announced recently. Salvage operations have been underway by the Abe Goldin and Sons Company, Kaukauna, removing damaged machinery and equipment.

Mr. Russell said the rebuilt mill will be modern and more nearly fireproof. It will be one-story, with all equipment on one floor. An addition is likely to be made later. The company hopes to obtain one large paper machine to replace the two smaller ones damaged in the fire.

Credit Union Invests in War Bonds

The Bull's Eye Credit Union of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., division, has invested all surplus cash over and above that required for loans and withdrawals, in government securities—a sum of $20,000 invested in the opening day of the present drive.

Sees Pollution a Major Post-War Project

L. F. Warrick of the Wisconsin State Board of Health expects the elimination of stream pollution to be one of the principal post-war projects for state and local governments, he said recently. He said his board has studied various ways of using industrial wastes and of eliminating pollution of streams.

Wins Four-Month Safety Contest

A safety contest of four months' duration has been won by the electrical department of the Kimberly-Clark Corporation's Lakeview mill at Neenah, Wis., by a narrow margin over the oilers. Each of seven sections of the engineering department was headed by a foreman. Points for safe manpower work hours were awarded, with additional points for reports on unsafe practices or conditions. A chicken dinner was served to the winners.

Thompson & Lichtner Expand

The Thompson & Lichtner Company, Inc., engineers in management, research, and construction, in order to provide greater space for its expanding services to clients, announces the removal of its Management Division offices to the Park Square Building, Boston 16, Mass., Telephone HUBbard 0875.

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PAPER

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*Estimated American Paper Production for 1943

Low Paper Supply Acutely Felt in Chicago

Restricted Quantity of Paper For Civilian Use and Other Strains On Home Front Economy Increase Concern In Midwest—Hammermill Executive Addresses Paper Group — Paper Men Top Quota.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., December 4, 1944—Inasmuch as waste paper continues to be the key to at least a part of the relief the industry can expect at this time, it is interesting to note that local waste paper dealers are still vitally concerned over the situation. This week a summarization of reports termed the present crisis "acute." The coming of cold weather has caused the trade to be more worried over future collections even though the school collections in the Chicago metropolitan district had been outstanding. Inventories at area mills were reported "just about holding" with all grades of waste paper still in good call.

In the remainder of the local market, only more pessimistic reports were heard during the week. The military has definitely stepped up its requirements even above the percentages which are supposed to set the pace, according to local comment. Expansion of the invasion forces has cut further deep inroads into the container and setup box supply to the point where civilian distribution is very much on a "take it if you can possibly get it—and you can't" basis. Sulphites in all grades—all "military" papers—were faring not a bit better as Chicago prepared to ring down the curtain on its third war year. Increasing concern over the general tax situation, over manpower shortages and over slowness of the government reconversion program was a preponderant note locally.

Paper Group Hears Hammermill Executive

The Paper Group of the Purchasing Agents Association of Chicago held another of its interesting and informative evening sessions on Thursday, November 30, at the Medinah Club of Chicago. A. E. Frampton, advertising manager and assistant general sales manager of the Hammermill Paper Company of Erie, Pa., was the featured speaker, discussing "Paper in the Post-War Period." Mr. Frampton particularly covered the plans for his company's own Hammermill Bond, Ledger, Safety, Offset, Bristol and Cover papers and did the job with the genuine flair of a real speaker, holding the attention of his fine audience at all times. The speaker stressed a program to improve the printing qualities of paper with particular emphasis on reproduction and durability. He also gave some predictions as to the length of time it will be before civilian users can expect some return to normalcy,

Later in the evening the audience enjoyed a half hour all music show provided through the courtesy of E. J. Brach & Sons.

Paper Men Top Drive Quota

The paper market of Chicago has another reason to be proud. Under the leadership of co-chairmen Arthur T. Bermingham of Bermingham & Prosser and A. G. Bollinger of the Morris Paper Mills, the industry has already over-subscribed its quota of $115,000 in relation to the current Community and War Fund Drive. The fine paper group, under Mr. Bermingham's direction, and the coarse paper group, with Mr. Bollinger as chairman, has raised a total of $122,700—with the amount probably exceeding that figure by a substantial margin at this time.

The industry salutes the following men who participated in the drive as vice chairmen or team captains —and adds another salute to the unnamed workers who did the real job of collecting the money—this time both within and without the industry itself: J. L. Gedwitz, Lanzit Corrugated Box Company; J. L. Bermingham, Fort Dearborn Paper Company; Bruce Crocker, Whitaker Paper Company; Maynard Fessenden, Ace Carton Corporation; Alex Fisher, Mutual Paper Box Company; A. J. Furth, Pioneer Paper Stock Company; A. Goldstein, Garden City Envelope Company; K. E. Hellstrom, Messinger Paper Company; William Knox, Knox & Schneider; Frank Meiners, Filer Fibre Company; R. B. Paine, Whitaker Paper Company; Stephen Pearse, Cleveland Container Company; James Pringle, Brown Paper Goods Company; E. A. Rohrer, Swigart Paper Company; E. P. Schoenthaler, Jr., H. P. Smith Paper Company; B. G. Spinner, Chicago Paper Company; W. O. Swett, American Tag Company and Richard Thirkeld, Sorg Paper Company.

Salesmen Hear Naval Leader

The western division of the Salesmen's Association of the Paper Industry was preparing for a big attendance at its Monday, December 4, noon meeting at the Hotel Sherman. Publicity given the War Bond Show at Navy Pier has accentuated interest in the appearance of the SAPEYES current speaking guest, Commander W. C. Eddy, head of the radio naval training units here and skilled speaker on the subjects of aptitude tests which he has helped to develop. Phil Howard, publisher of the American Paper Merchant, will introduce the speaker.

Fire Destroys Lubin Bros. Plant

A "5-11" fire virtually destroyed the plant of the Lubin Brothers Paper Company at 1040 N. Halsted, Chicago. The fire, which occurred on November 25, swept through the five story building and did an estimated damage of $50,000. The owner, Isadore Lubin, suffered severe burns when he rushed in to the building to save some valuable papers.

Salesmen to Hold Christmas Party

The Salesmen's Association of the Paper Industry will hold their annual Christmas Party at the "400" restaurant, Fifth avenue and 43rd street, New York on December 18.

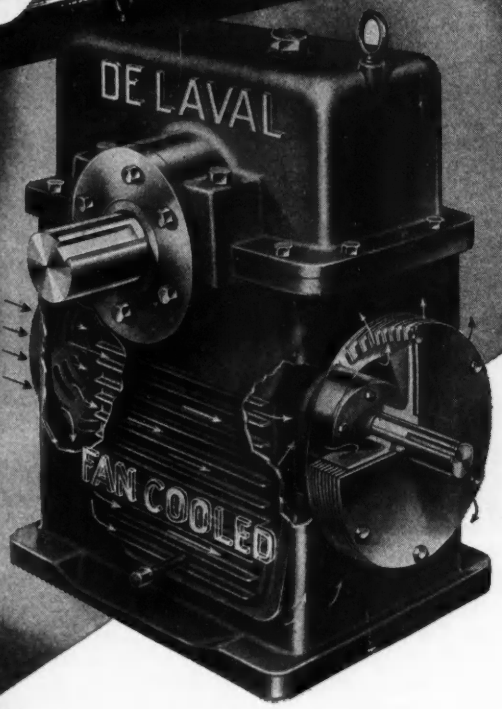
The secretary of the association states that, "To make the party more enjoyable we want to bring a little Christmas cheer to a group of wounded service men back from the fighting fronts. These men are now in nearby hospitals. Besides giving them a good luncheon we want to give each one a suitable present."

Subscriptions should be made not later than December 11 to the secretary, E. O. Merchant, 122 East 42nd street, New York 17.

SOON AVAILABLE

NEW FAN-COOLED

DE LAVAL WORM GEAR



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LOWER COST PER HORSEPOWER

Operation at higher ratings permits the use of correspondingly smaller and less costly units.

SMALLER SIZE

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The *NEW* DE LAVAL *FAN-COOLED* WORM GEAR SPEED REDUCER

will soon be available in a complete line of sizes. Send for literature now being prepared.

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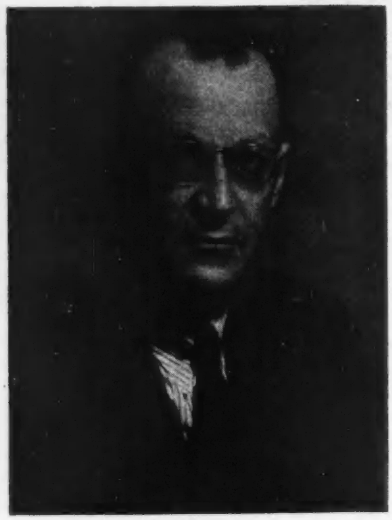
Wm. Barclay Made Vice-President

Twenty-eight years ago William Barclay entered the service of Powell River Company of Powell River and Vancouver, B. C., as a junior clerk. Today he is vice-president of Powell River Sales Company, and his recent appointment to that position strikingly demonstrates once again the scope offered for advancement in this progressive and rapidly expanding British Columbia pulp and paper organization.

Mr. Barclay, who has been a well known figure



WILLIAM BARCLAY

in the industry in the east and south, as well as on the west coast for many years, was born in Glasgow, Scotland, on February 21, 1885. As a child he came to Canada with his family who, after spending some years in Alberta, moved to the coast and settled in British Columbia in 1898.

After receiving his education at schools in British Columbia and Spokane, Wash., Bill Barclay was employed in the operating department of the Canadian Pacific Railway for seven years, chiefly in the Kootenay divisions. From there he went to Powell River to join the paper company, beginning an association that has extended over more than a quarter century.

After filling various positions at Powell River, Mr. Barclay went to Vancouver in July, 1926, to take charge of sales, following the death of Norman Lang. He assisted in the organization of Powell River Sales Company in 1937 and became the new company's general manager, a post which he held until his appointment as vice-president.

To Manage Tidy-House Paper Products

Stanley H. Oshan, chief of the Sports Section of the War Finance Committee for New York during the Third, Fourth and Fifth War Loans, announced last week at the Sixth War Loan Sports Committee luncheon that he has resigned his post.

Mr. Oshan will continue to work with the sports group as Vice-Chairman of the Committee and in an advisory capacity. Mr. Oshan will become manager of Tidy-House Paper Products, of Brooklyn. Before coming to the War Finance Committee, Oshan was affiliated with this industry.

New Firm Opens in Worcester

Fred R. Profit, Carl W. Pearson and Harold B. Allen have recently organized Industrial Papers, Incorporated. They will operate as industrial paper distributors, selling printing and wrapping papers.

This new company is located at 400 Grove street, Worcester, Mass. with warehouse and office space in the same building.

Fred R. Profit and Carl W. Pearson recently resigned from the Estey Paper Company, the Worcester division of Carter-Rice Paper Company of Boston. Mr. Profit spent 20 years with the Estey concern, having worked inside and for the past five years travelled the territory in and around Worcester. Mr. Pearson had been with the Estey Paper Company for the past three years, travelling within the City of Worcester. Before going with Estey, Mr. Pearson was with the George C. Whiting Company, large valentine and holiday line publishers. He was assistant superintendent in charge of the printing department at this latter concern. Mr. Allen was one of Industrial Paper and Cordage Company's salesmen, travelling the Worcester territory.

The officers of the new company are: J. C. Campbell, president; Carl W. Pearson, vice president; Fred R. Profit, treasurer and general manager; Harold B. Allen, assistant treasurer; C. E. Wheeler, secretary.

J. C. Campbell is also president of the Atwood Paper Company, Brockton, Mass., and treasurer and general manager of the Industrial Paper and Cordage Company, Pawtucket, R. I. C. E. Wheeler is a prominent Providence, R. I. attorney.

This new company will become one of the divisions of the Industrial Paper and Cordage Company.

Dickey Appointed Chief Engineer

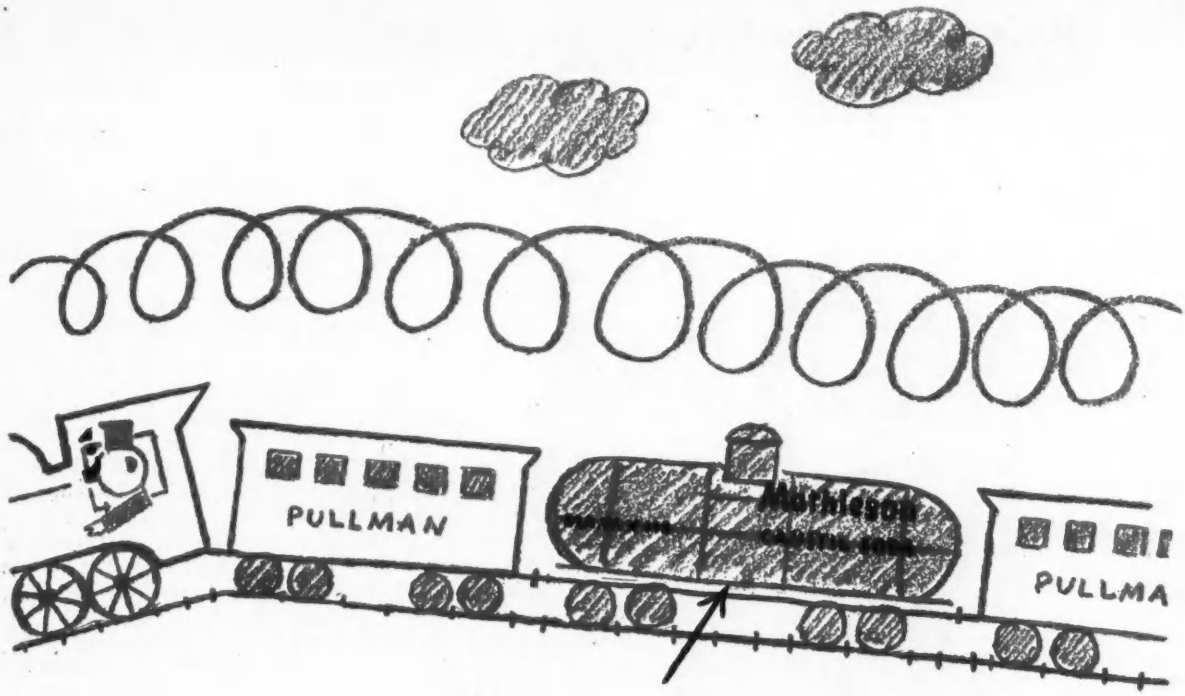
Bailey Meter Company, Cleveland, Ohio, announces the appointment of P. S. Dickey as chief engineer. Mr. Dickey will supervise all engineering, research and design activities for the company. He will be assisted by H. H. Gorrie, assistant chief engineer, and R. E. Clark, manager of contract engineering.

In his former position of research engineer, Mr. Dickey has conducted numerous studies here and abroad on the problems involved in the control of both forced and natural circulation boilers in stationary, marine, and mobile service. He is the author of numerous patents, technical papers and articles on measurement and control as applied to power and process operations.

Mr. Dickey is a mechanical engineering graduate from Purdue University and has served Bailey Meter Company continuously in various engineering capacities since his graduation in 1925.

H. H. Gorrie, who has been appointed assistant chief engineer, is a graduate of Rensselaer Polytechnic Institute and has been associated with Bailey Meter Company continuously since his graduation in 1927. He has had wide firsthand experience in power and process problems having formerly been manager of the company's San Francisco branch office, and later head of the Bailey Meter Company's control engineering department.

R. E. Clark is a graduate of the University of Kentucky and has completed over 20 years service with Bailey Meter Company in the capacities of field engineer, meter engineer and automatic control engineer.



it hasn't happened yet-

NO, we haven't yet had to attempt passenger train service to meet delivery schedules for war-vital Mathieson Caustic Soda. The great Mathieson fleet of tank cars rides the rails with guns, tanks, airplane parts—definitely travels first-class.

And no Pullman car is more carefully groomed between trips than a Mathieson Liquid Caustic tank car. Each is minutely inspected and cleaned at our own car shops—checked to assure fast delivery of clean, pure caustic for the thousand-fold job it does to speed Victory. Yes—because of the grand job the railroads are doing to move war supplies and Mathieson's attention to important details—it's first-class transportation for a top-class product!

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CAUSTIC SODA . . SODA ASH . . BICARBONATE OF SODA . . LIQUID CHLORINE . . BLEACHING POWDER . . H T H PRODUCTS . . AMMONIA, ANHYDROUS & AQUA . . FUSED ALKALI PRODUCTS . . SYNTHETIC SALT CAKE . . DRY ICE . . CARBONIC GAS . . SODIUM CHLORITE PRODUCTS . . SODIUM METHYLATE

H. J. Eklund Now Chief Engineer

Henrik J. Eklund is now chief engineer of D. J. Murray Manufacturing Company, Wausau, Wis., according to an announcement by that company. Since 1933 Mr. Eklund has been associated with the designing and development of paper and pulp mill machinery, both in the United States and Finland.

Mr. Eklund is a graduate of the Polytechnic

HENRIK J. EKLUND

Institute of Finland in Mechanical Engineering with a Master's degree, with two years of post-graduate course at the same college. Since coming to the United States in 1936, he has been associated with several of the outstanding manufacturers of paper mill machinery. With D. J. Murray Manufacturing Company he has charge of designing, engineering, supervising, and development work.

To Add Special Paper Dept.

The Disbrow Manufacturing Company in its post-war planning, in spite of present conditions, is adding a "Special Papers Department" to its manufacturing business. Elliott R. Disbrow, who for more than thirty years has been identified with the paper jobbing business, will head this new department. Mr. Disbrow will have a sales force of two or three experienced men to assist him. The mills he represents, plus the present mill contracts of the company, assures the trade of a liberal supply of paper.

For more than seventy years the name of Disbrow has been outstanding in the Paper Industry. The late Hamilton T. Disbrow, a resident of Newark for more than twenty-five years, started in the paper jobbing business in New York in 1885. He was one of the original incorporators of Coy, Hunt & Co. of New York. Later he was one of the incorporators of Coy Disbrow & Co. also of New York. At the time of his death Mr. Disbrow was chairman of the board of directors of the latter company.

Chester H. Disbrow, a son of the late Hamilton T. Disbrow, organized and incorporated the Disbrow Manufacturing Company in 1929. He is the principal behind the corporation. Kenneth M. Disbrow, a brother, who received part of his training in the paper business is also one of the original incorporators and is now active in its management. Now Elliott, another brother, has joined the Corporation. He will have the title of vice-president.

From a small beginning the Disbrow Manufacturing Company has become a national institution. Its seed bags and paper specialties are sold in every State in the Union.

In the Metropolitan Section this concern is known for its line of folding paper boxes. Post-war planning in this department has lined up several new specialties, and orders have been signed for new and faster equipment.

TAPPI Notes

Henry J. Allison, Jr., formerly chemical engineer with the Chemical Warfare Service is now in the research laboratory of the Container Corporation of America, 10 North Clark street, Chicago 2, Ill.

Harry H. Heuser, formerly with the Vulcan Detinning Company is now chemist for the Pequannock Valley Paper Company, Butler, N. J.

Herman L. Berg has been transferred from the Los Angeles, Cal. to the New York office of the Bulkley Dunton Company, 295 Madison avenue, New York, N. Y.

John M. Fultz, formerly of the Standard Paper Manufacturing Company is now in the development division of the Reynolds Metal Company, 10th & Byrd streets, Richmond 13, Va.

The Watertown Group of the TAPPI Empire State Section will meet at the Hotel Woodruff, Watertown, N. Y., on Thursday, December 14. Representatives of resin manufacturers will discuss plastics.

S. M. Rust Becomes Board Chairman

S. M. Rust, retiring president of The Rust Engineering Company has been elected chairman of the company's board of directors; and S. M. Rust, Jr., who has been serving as executive vice president, has been elected president of the company, the board of directors announces.

Mr. Rust, Sr., founded the company in 1905 with his brothers, E. M. Rust and the late E. J. Rust, engaging in engineering design and construction of complete industrial plants and facilities. The company maintains offices at Pittsburgh, Pa., Birmingham, Ala., Washington, D. C., and New York, N. Y.

Mr. Rust, Jr., entered the organization after graduation from Lehigh University in mechanical engineering, working in the field and in various other capacities before becoming vice president.

Philadelphia Nominates Officers

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., December 4, 1944 — The nominating committee of the Philadelphia Paper and Cordage Association has submitted the following nominees to serve for 1945: President—Carroll T. Gardner, Groveton, Paper Company; vice-president—R. H. Decker, Dill and Collins, Inc.; secretary—Charles Stokes, Sabin-Robbins Paper Company; treasurer—Maurice Walther, D. L. Ward Company. For the directorate: Jack Culverhouse, Ford Howard Paper Company, Otto F. Steinbrecker, Minnesota Mining and Manufacturing Company, Allen M. Russell, Molten Paper Company, S. E. Griffiths, National Waterproofing Company, Howard Satterthwaite, Garrett-Buchanan Company, and J. Howard Bancroft, Independent Twine and Yarn Company.

Take a Tip from the ANCIENT WARRIOR

He carried only one shield. That was his defense against enemy attack. By *placing it right,* that one shield was enough. That's the way with your plant equipment.

On most jobs you need Stainless Steel only on the exposed surface side.

INGACLAD
STAINLESS-CLAD STEEL

has for 12 years proved its protective efficiency in hundreds of America's finest industrial plants. In addition to stretching your "Stainless Dollars," it offers the additional advantages of easier fabrication and better heat diffusion in kettles and other vessels where heat is applied.

Write for special IngAclad folder and Manual of Fabricating and Welding Procedure.

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PRODUCTS OF BORG-WARNER

Coe Northwestern Water Heater

The Coe Northwestern Water Heater, made by the Coe Manufacturing Company, Painesville, Ohio, is a complete, compact unit containing the regulator and safety features built into or attached to the heater head. No other accessories are needed. It is built in fourteen sizes as follows: 200, 300, 500, 700, 800, 1000, 1200, 1400, 1600, 1800, 2000, 2200, 2500 and 3000 gallons per hour.

Installation requires the attachment of only three pipes—high pressure steam supply, cold water inlet and hot water outlet. The head, coil and equipment are removable as a unit. All adjustments are made at the factory to deliver hot water at the temperature most satisfactory for washroom purposes. The Coe Safety Water Heater delivers water at 110 degs. F. to 120 degs. F. Water at this temperature is satisfactory for wash room use yet is not hot enough to cause scalding. Also, the liberation of corrosive gases and the precipitation of solids is so slight at this temperature that long life of the equipment is assured.

The Coe Northwestern Water Heater has the following safety features: — 1. The temperature regulator is installed in the steam line with the bulb located in the water space of the heater. Any change in temperature is immediately transmitted to the control valve. This minimizes the lag and overshooting of the water temperature. 2. A tempering valve is provided in the hot water outlet to prevent the water delivered from rising to a scalding temperature. Thus, in case of regulator failure or other unusual condition the user is protected. 3. A safety release valve provided in the water space of the heater will open and discharge to atmosphere in case of excessive pressures.

U. S. Rubber Co. Makes Appointments

Ernest G. Brown, general manager of the mechanical goods division, United States Rubber Company, announced recently the appointment of Herman A. Everlien as general sales manager of the division and Walter F. Spoerl as merchandise manager. Both positions are newly created.

Mr. Everlien has had more than 41 years experience in the mechanical rubber goods industry, Mr. Spoerl 36 years. Both men began their rubber careers at early ages as clerks in the sales department of the old Revere Rubber Company in Chicago, later consolidated into the United States Rubber organization.

Mr. Everlien became chief clerk in the Rever office, and in 1913 was made a salesman, responsible for all territory between Chicago and Hastings, Nebraska. In 1920 he went to Pittsburgh as mechanical goods sales manager, and in 1924 he was transferred to New York as manager of branch sales, the position he held until appointment to his new post.

Mr. Spoerl started his career in 1908. He became chief clerk in Chicago and later assistant manager of that branch. From 1934 until the present promotion he has held an executive sales position.

★ ANY SIZE

The IDEAL Material for Tanks and Chests

★ ANY SHAPE

Kalamazoo Vitrified Glazed TILE

★ MAXIMUM STORAGE ★ PROPER AGITATION ★

PERFECT CLEANLINESS

Chests available now with complete Erection Service

KALAMAZOO TANK & SILO CO. Kalamazoo Michigan

PRINTING COMMITTEE MAKES PAPER AWARDS

(Continued from page 7)

No. 155, Aetna Paper Co., 14.39 cents (100,000 pounds).
No. 156, Aetna Paper Co., 15.09 cents.
No. 176, Paper Corp. of U. S., 14.25 cents.
No. 177, Paper Corp. of U. S., 24.25 cents.
No. 183, Wilcox-Walter-Furlong Paper Co., 7.75 cents (200,000 pounds).
No. 184, Wilcox-Walter-Furlong Paper Co., 7.75 cents (100,000 pounds); Whitaker Paper Co., 7.67 cents (200,000 pounds).
No, 185, Wilcox-Walter-Furlong Paper Co., 8.47 cents.
No. 189, Barton, Duer and Koch Paper Co., 13.97 cents.
No. 190, Barton, Duer and Koch Paper Co., 14.67 cents.
No. 191, Barton, Duer and Koch Paper Co., 15.47 cents.
No. 192, R. P. Andrews Paper Co., 14.47 cents.
No. 195, Barton, Duer and Koch Paper Co., 24.35 cents.
No. 196, Barton, Duer and Koch Paper Co., 25.35 cents.
No. 203, Whitaker Paper Co., 8.52 cents.
No. 205, Whitaker Paper Co., 13.53 cents.
No. 208, Frank Parsons Paper Co., 5.75 cents.
No. 209, Frank Parsons Paper Co., 5.25 cents.
No. 210, Whitaker Paper Co., 5.905 cents (4¾ inch rolls); 5.655 (5¾ inch rolls).
No. 219, R. P. Andrews Paper Co., 4.65 cents.
No. 255, R. P. Andrews Paper Co., 10.19 cents (Buff and Salmon); 10.46 cents (Moss green).
No. 271, Paper Corp. of U. S., 8.87 cents.
No. 276, Barton, Duer and Koch Paper Co., 8.50 cents.
No. 277, Barton, Duer and Koch Paper Co., 9.50 cents.
No. 302, Old Dominion Paper Co., $33.978 per M sheets.
No. 303, Old Dominion Paper Co., $48.968 per M sheets.
No. 305, Old Dominion Paper Co., $44.838 per M sheets.
No. 306, Frank Parsons Paper Co., 5.50 cents.
No. 307, Frank Parsons Paper Co., 5.85 cents.
No. 309, Barton, Duer and Koch Paper Co., 6.40 cents.
No. 325, Whitaker Paper Co., 6.22 cents (600,000 pounds); R. P. Andrews Paper Co., 6.17 cents (500,000 pounds).
No. 326, Whitaker Paper Co., 6.22 cents (600,000 pounds); R. P. Andrews Paper Co., 6.17 cents (500,000 pounds).
No. 327, Whitaker Paper Co., 6.22 cents (600,000 pounds); R. P. Andrews Paper Co., 6.17 cents (500,000 pounds).
No. 366, Mathers-Lamm Paper Co., 4.456 cents.
No. 368, Consolidated Paper Co., 5.87 cents.
No. 369, Mead Sales Co., Inc., 3.90 cents.

R. W. Smith Dies at Glendale, Ariz.

Word has just been received of the death on November 29, at his ranch, Glendale, Ariz., of Richard W. Smith, vice president of the Filer Fibre Company, Filer City, Mich.

Stein, Hall & Co. Changes

E. E. Tweed, formerly technical control supervisor and chief chemist for the Mead Corporation, Heald Division, Lynchburg, Va., has joined the Paper Department sales staff of Stein, Hall & Co., Inc., New York, and will cover the paper mills in the Southeastern States. After his graduation from Chillicothe, Ohio, High School, Mr. Tweed studied chemistry at Ohio Wesleyan University. In 1928 he joined the Mead Corporation, where his services included chemical assistant at the Chillicothe soda pulp mill, research assistant in the Chillicothe laboratory, and pulp mill superintendent of the Nashville and Sylva, N. C., divisions. He lives in Sylva.

Clifford T. Fogarty will be transferred from Stein-Hall's Southeastern territory to cover the paper industry in New York State and Pennsylvania, formerly covered by Robert D. McCarron. Mr. McCarron will cover part of the New England territory, including some paper mills. F. W. Perry, who formerly covered the New England territory, is now acting manager of the New Products Development division of the Technical Department at the company's New York headquarters.

To Hold Annual Party

[FROM OUR REGULAR CORRESPONDENT]

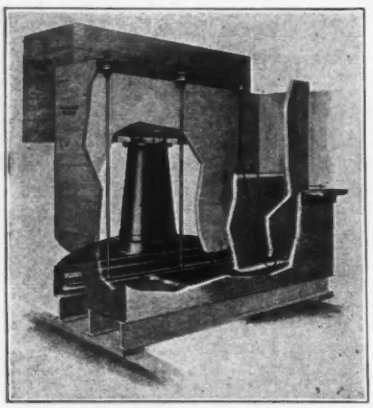
PHILADELPHIA, Pa., December 4, 1944—President W. J. Culverhouse of the Philadelphia Paper and Cordage Association, Inc., has sent out announcements of the association's annual Christmas Party, which this year will be held at the Benjamin Franklin Hotel on Wednesday, December 20th beginning at 12:15 P.M. Carroll T. Gardner, Groveton Paper Company, chairman of the entertainment committee, who has been nominated for the presidency of the association for the coming year, has completed plans for entertaining sixty underprivileged children selected from the Salvation Army with a wonderful dinner, presents and entertainment. Lee F. Johnson, Gummed Products Company, co-chairman with Mr. Gardner, urges every member of the association to enter into the spirit of Christmas and suggests that the best way to do this is to send in reservations promptly to J. R. Howarth, 804 Sansom street. Tables will be arranged to seat 10 persons, and one or more tables may be reserved; ten people will be seated at each table, or as many individual reservations as may be wanted can be made.

C. C. Woodward Goes to California

HOLYOKE, Mass., December 4, 1944—Charles C. Woodward, who has been with the Hampden Glazed Paper and Card Company for the past ten years and in the capacity of purchasing agent for the past three years, because of the health of his young daughter, is obliged to move his family on or about December 10 hastily to southern California. Because of the urgency of his departure, Mr. Woodward states that his plans for the future are incomplete.

Flow Spreader for Fourdriniers

Illustrated herewith is the new Murray Flow Spreader for Fourdrinier machines, manufactured by D. J. Murray Manufacturing Company, Wausau, Wis. Built to fit any existing paper machine, and simple to install for replacement of any existing piping headers and fittings, this is a unit of all copper and bronze cast construction for delivering the stock from the surge box to the head box. The flow spreader is made the full width of the head box. The distributor nozzle is brass casting arranged with a series of control gates, also the full width of the head box, which deliver the flow over the entire width into a fully open area—a streamlined flow. The advantages emphasized by the manufacturer for the new flow spreader are high efficiency, reduced head loss, screens at lowest levels will deliver maximum flow, and increased paper machine speed without raising the screens. Furnished complete separately as units to install between the existing surge box and existing head box, or also furnished with new design streamlined head boxes as a complete unit to install on paper machines.



Changes in Reliance Personnel

Clarence L. Collens, for 37 years president of the Reliance Electric and Engineering Company, Cleveland, has been elected to the newly-created post of Chairman of the Board, and is succeeded in the presidency by James W. Corey, sales vice president since 1940, it was announced recently.

James W. Corey, Reliance's new president, has been actively identified with the electrical industry for many years. He is a member of the Industry Advisory Committee to the electrical branch of the War Production Board and has also been active in the affairs of the National Electrical Manufacturers Association.

Announcement was likewise made of the resignation, to become effective at year's end, of H. M. Hitchcock, senior vice president and treasurer. Mr. Hitchcock has postponed his resignation for several years in the interest of expanded wartime operations. He will, however, remain a director of Reliance.

A. M. MacCutcheon, engineering vice president, was elected to fill the office of senior vice president upon Mr. Hitchcock's retirement.

Also effective immediately for reasons of health, C. V. Putnam retires after 38 years with the company, to be succeeded in the office of secretary by Roscoe H. Smith, who will continue his duties as head of the sales promotion department.

DOUBLE-DISC PULPERS
36" and 24" sizes. Many Plate Patterns.
This compact, high production unit is widely used to salvage rejects, screenings; to pulp mixed papers and process semi-chemical and other virgin pulps.
Investigate, if you are not already awake to the fast, thorough and uniform results obtainable with a Bauer pulper.
ARMY E NAVY
Bauer PULPER
THE BAUER BROS. CO.
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Bauer
The BAUER BROS. Co.
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AVOID ALL WASTE • BACK THE ATTACK • BUY BONDS

"baby" your felts

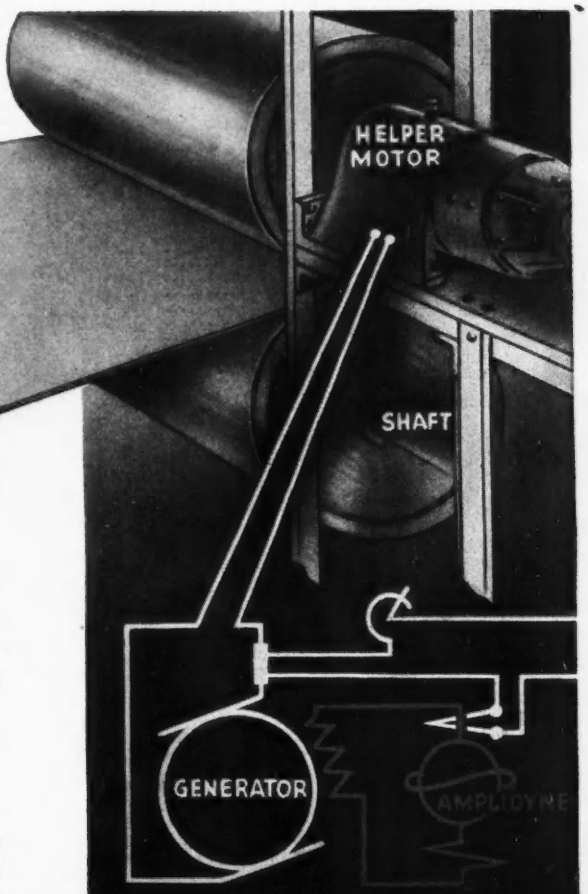
Simple, new, save-the-load control system, making use of the G-E amplidyne, keeps motor torque "on the beam" regardless of machine speed.

NEW, wide-range flexibility and simplicity have now been added to the service-proved advantages of G-E auxiliary drives for paper machines. Felts are more fully protected from strain and friction, draw is more accurately regulated, acceleration and deceleration are smoothly accomplished.

This basic improvement in helper-drive operation results from application of the instantly responsive G-E amplidyne to load regulation and speed control. Helper motors on any roll or group of rolls will furnish the torque to take all the drive load off the felts, regardless of operating speeds or speed changes. Or they can be controlled in accordance with the suction-box vacuum or other variables so as to counterbalance changes in load. They are equally applicable to mechanically driven or electrically driven machines, from board to tissue, *old or new.*

The simplicity of the new control system backs up the well-proved dependability of G-E drive motors and generators in paper-mill service.

Our application engineering combines the most advanced electrical methods with a broad background of practical experience on sectional drives, wet-end drives, and other paper-mill electrification problems. *General Electric Co., Schenectady 5, N.Y.*



TOP-ROLL DRIVE

By means of amplidyne control, a "helper" motor driving the top roll can relieve the friction load on the felts and wet sheet, without adding to the complexity of speed control. Motor torque is maintained at constant level, thus offsetting friction load, regardless of operating speed.

PAPER MILL DRIVES

GENERAL ELECTRIC

668-11-137

Buy all the BONDS you can—*and keep all you buy*

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending December 2, 1944

STOCKS

	High	Low	Last
A. P. W.	3⅞	3½	3⅞
Armstrong Cork Co.	43	42¾	43
Celotex Corp.	14	13⅝	13⅝
Celotex Corp., pf.	19⅛	18¾	19
Certain-Teed Products Corp.	7⅜	7	7
Certain-Teed Products Corp., pf.	133½	130	130
Champion Paper & Fibre Co.	29⅜	29	29⅜
Champion Paper & Fibre Co., pf.	114½	114½	114½
Congoleum Nairn Co.	25¾	25⅛	25⅜
Container Corp. of America	28½	27⅜	28½
Continental-Diamond Fibre Co.	10⅞	10⅜	10⅜
Crown-Zellerbach Co.	21	20⅛	20⅞
Crown-Zellerbach Co., pf.	104½	103½	104½
Dixie Cup Co.	17⅛	17	17
Dixie Cup Co.,—A.	48½	47⅛	48⅛
Flintkote Co.	22½	21⅞	22⅛
Flintkote Co., pf.	109	109	109
Robert Gair	4¾	4⅝	4¾
Robert Gair, pf.	16¾	16¾	16¾
International Paper Co.	19	18⅝	18⅞
International Paper Co., pf.	89¾	88⅞	89⅜
Johns-Manville Corp.	98½	97	97
Johns-Manville Corp., pf.	...	...	...
Kimberly-Clark Corp.	37¾	37⅜	37⅜
MacAndrews & Forbes	29½	29	29⅛
MacAndrews & Forbes, pf.	147½	147½	147½
Masonite Corp.	41⅜	40	40
Mead Corp.	12⅜	11½	12⅜
Mead Corp., pf. A—6%	99½	99½	99½
Mead Corp., pf. B—5½%	94	92½	94
National Container Corp.	12⅞	11¾	12½
Paraffine Companies, Inc.	59	58	58
Paraffine Companies, Inc., pf.	...	...	...
Rayonier, Inc.	16¼	15½	15¾
Rayonier, Inc., pf.	34	33½	34
Ruberoid Co.	35⅝	33	33
Scott Paper Co.	45	44¾	45
Scott Paper Co., pf.	115	115	115
Sutherland Paper Co.	30⅜	30⅜	30⅜
Union Bag & Paper Corp.	14⅝	14	14⅝
United Paperboard Co.	6⅛	6⅛	6⅛
U. S. Gypsum Co.	77¾	76	77¾
U. S. Gypsum Co., pf.	186	186	186
West Virginia Pulp & Paper Co.	...	...	...
West Virginia Pulp & Paper Co., pf.	109	109	109

BONDS

Abitibi Pulp & Paper Co. 5s '53	107½	97	107¼
Celtotex Corp. 3¾s '55	105½	105¼	105½
Certain-Teed Products Corp. 5½s '48	102¾	102	102¾
Champion Paper & Fibre Co. 4¼s '50	...	...	...
International Paper Co. 6s '55	107¾	105½	105½
International Paper Co. 5s '47	103¾	103½	103½
Mead Corp. 3½s '53	...	...	...
West Virginia Pulp & Paper Co. 3s '54	...	...	...

New York Curb Exchange

High, Low and Last for Week Ending December 2, 1944

STOCKS

	High	Low	Last
Great Northern Paper Co.	36¾	36¾	36¾
Hummel-Ross Fibre Corp.	7⅛	7	7
St. Regis Paper Co.	5⅜	5¼	5½
St. Regis Paper Co., pf.	...	...	...
Taggart Corp.	...	...	...

BONDS

American Writing Paper Co. 6s '61	101⅞	101⅞	101⅞

Rayonier Earnings Up

Rayonier Inc., manufacturers of dissolving pulps, reports for the six months ended October 31, 1944, the first half of its current fiscal year, consolidated net profit after all charges, of $900,277 compared with $891,803 in the corresponding period of 1943. The earnings were equal after dividends on the $2 dividend preferred shares to 28 cents per share on the common stock in both periods.

Production and sales tonnage figures for the 1944 period were lower, due largely to the fact that the Shelton, Wash., mill suspended operations in August 1943, and has not been reopened.

A. P. W. Co. Nets 18 Cents

The A. P. W. Paper Company, for the sixteen weeks to October 21, reports a net profit of $29,176, or 18 cents a share, against $11,535, or 7 cents a share, for 1943 period.

Abitibi Bonds Improve

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., December 4, 1944—Following the publication of the report of the Hughes conciliation committee of the Ontario government to bring the Abitibi Power and Paper Company out of receivership, the company's present bonds stiffened in price, while the preferred and common shares gave ground. While within the first few days after the announcement the bonds rose by 5½ points, the 6% preferred shares declined six points and the common eased off slightly. About the same time the 7% preferred stock sold at 106 final price, against 120 a few days earlier.

The decline in the shares would seem to indicate fairly well how investors evaluate the plan. That the decline was accompanied by a great increase in volume of trading adds to its significance.

Several questions have been raised as to the position of the proposed security holdings under the plan, which, it is believed on the street, will be approved by the various committees. One of these questions is whether any portion of the new $1,000 bond will be taxable or not and another is the relation of the proposed dividend obligations to earnings of the company. It is pointed out that the latter point is surrounded with uncertainty as to the standard profits base that the Income Tax Department will decide to establish for Abitibi and also whether the depreciation reserve written off in the past several years of $4,500,000 will be permitted to be maintained.

Actual value to the investor of the new bonds will depend on his own tax position. Since 52.27% of the principal of the new bonds represents accrued interest, that portion will presumably be ultimately taxable, and the investor will have to place a value on them dictated by his own tax rate. In view of Mr. Elliott's announcement, the man with the lowest tax rate can afford to pay the highest price for the bonds, which would indicate that the bonds will gradually gravitate toward the institutions which do not pay taxes on their investments, and that the prevailing price for the bonds will be adjusted to what life insurance and other companies regard as a fair value for them.

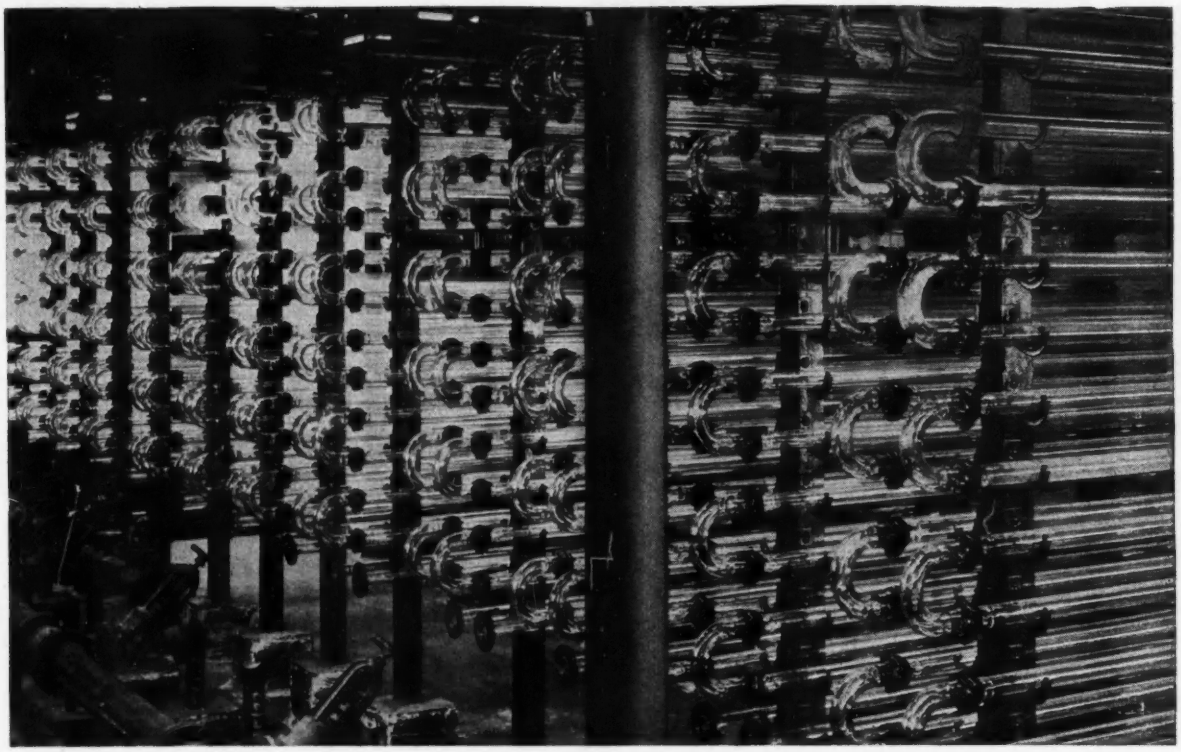
St. Regis To Expand in Spring

WATERTOWN, N. Y., December 4, 1944—Work will start in the spring on the $3,000,000 expansion program at the Deferiet mill of the St. Regis Paper Company which was briefly mentioned in the PAPER TRADE JOURNAL last week. The program will include the addition of a large Fourdrinier paper machine to its present battery of five, bringing the mill's total production to approximately 300 tons of paper per 24 hours and add 100 men to the present payroll of 500 hands.

The sixth machine, to be added, will have a production of at least 100 tons per 24 hours alone. It is the newsprint machine now located in the Algonquin Paper Company mill at Ogdensburg, which was recently sold by Frank A. Augsbury to Berst, Forster & Dixfield of New York and Plattsburgh.

This machine has a width of 212 inches, a trim of 205 inches and a speed of 1,200 feet per minute. It will be rebuilt and reconditioned by the Bagley & Sewall Company, Inc., of this city for the St. Regis Paper Company and will be replaced by two new and smaller machines desired to make the light board papers required by the new Algonquin owners.

Work on the reconditioning of the Algonquin



23 miles of Pyrex piping

IN A SINGLE INSTALLATION!

Over 23 miles of PYREX Brand Glass Piping are used in these cascade type heat exchangers installed at Basic Magnesium, Inc., Las Vegas, Nevada. Like many others, Basic Magnesium Engineers have learned that PYREX piping is a truly practical plant material—that it will stand up under the most severe operating conditions. Here is what they say:

> "In the Reduction Works Recovery operation, we use 6,240 ft. of 2" PYREX Piping on each acid cooler. We have 20 of these units, or a total of around 125,000 feet of this piping in service under full operation . . . We consider this service to be excellent under our operating conditions as replacements only amount to .008 of 1%...OUR FIRST UNIT WENT INTO OPERATION ON OCTOBER 24, 1942, AND HAS BEEN IN CONTINUOUS SERVICE SINCE."

Whenever you have a difficult piping problem, where corrosive conditions exist, where thermal and mechanical shock are factors, where transparency is an asset, where low cost and low maintenance are important, consider carefully the advantages of PYREX piping. Corning Engineers are at your service on any piping problems. Write: Industrial Sales Dept., PT12, Corning Glass Works, Corning, New York.

Corning Glass Works, Industrial Sales Dept., PT12
Corning, New York

Please send me a copy of your Bulletin 814 on PYREX Piping.

Name.....

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THE HYDRO-HEATER CORPORATION

Milwaukee, Wisconsin

announces the appointment

of

Chemipulp Process,

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in Canada

for Hydro-Heater applications in Sulphite Pulping Process Digester Service

The design and application of the Hydro-Heater is fully covered by patents in Canada and the United States, and infringements thereon will be prosecuted.

machine will start immediately at the Bagley & Sewall plant, which also will begin construction of the two machines for Berst, Forster & Dixfield. At the same time engineers will be working out the detailed plans for the St. Regis mill addition, which is to make possible the 50 per cent increase in its production.

Sherman Paper Products Changes

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., December 4, 1944—Two executive advancements have been announced by the Specialties Division of the Sherman Paper Products Corporation, Newton Upper Falls, Mass.

John Sheehan has been appointed to the position of Eastern Division manager, with headquarters in the News Building, Sherman's new office in New York City. Mr. Sheehan has been associated with Sherman Paper Products for eleven years as packaging engineer in the baking and food packaging trade.

Arthur Proudfoot has been named Western Division manager, with headquarters in Chicago. Mr. Proudfoot has been with Sherman Paper Products for fifteen years as packaging engineer, also in the baking and food packaging trade.

Gair Co. Declares Dividends

Directors of the Robert Gair Company have declared a quarterly dividend of 30 cents a share for the fourth quarter of the year 1944, upon the preferred stock of the par value of $20 per share of the company, payable December 22, 1944 to stockholders of record at the close of business on December 8, 1944, without the closing of the transfer books.

At the same meeting of the Board of Directors a dividend of 30 cents a share was declared upon the common stock of the company, payable December 22, 1944, to stockholders of record at the close of business December 8, 1944, without the closing of the transfer books.

Kimberly-Clark Votes Dividend

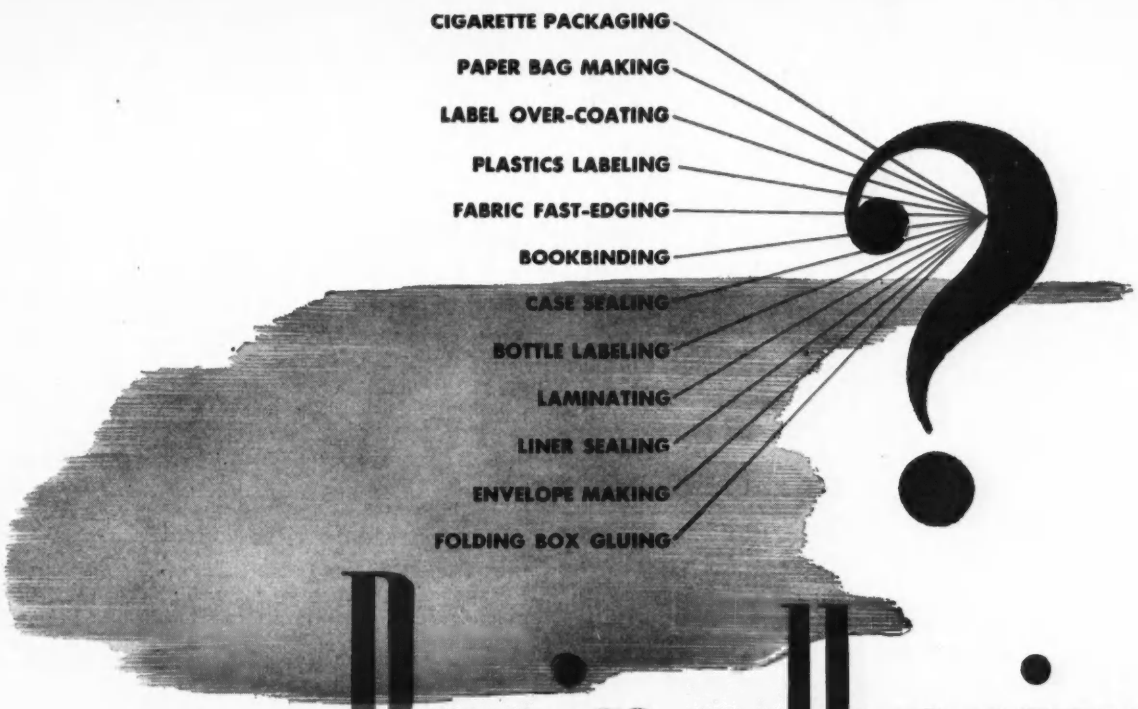
A special dividend of 50 cents per share of common stock was declared November 22 by Kimberly-Clark Corporation, Neenah, Wis., payable December 20 to shareholders of record December 8. This brings the 1944 payment to $2, against $1.75 for last year. The directors also declared an extra 12½-cent-per-share dividend and the quarterly dividend of 30 cents, payable January 2 on stock of record December 8.

Crown Zellerbach Earns Less

The report of the Crown Zellerbach Corporation and its subsidiaries for the six months ended with October, disclosed yesterday a consolidated net profit of $3,596,493, equal to $1 a share on the 2,261,199 shares of common stock outstanding. In the corresponding period of 1943 the net was $3,767,883, or $1.08 a share.

Schumacher Corp. Profits Up

The Schumacher Wall Board Corporation—Six months to Oct. 31: Net income, $77,290, or 77 cents a common share, against $73,624, or 69 cents a common share, last year.



is the answer a Resin adhesive

Experience shows that many amazing developments have resulted from the application of Resin Adhesives to packaging, converting and assembling operations previously thought to be at their highest level of efficiency.

In bookbinding, for example, a resin adhesive has eliminated the age-old production bottleneck of drying speed: It is now possible to glue-off, then round and back books in 20 minutes instead of 3 to 4 hours. In packaging, a resin adhesive is giving important new moisture protection to cigarettes. In specialty bag making, a resin adhesive makes it possible to safely ship coal, asphalt, fertilizer and many other products in less expensive, more convenient containers.

Note this carefully ... at National the solution of any adhesive problem is not limited to formulations of a single type or a limited group of resins. All types, both singly and in blends of high complexity, are employed. *And each recommendation of a resin product must justify itself competitively with every other type of adhesive.*

You can safely rely on National ... a specialist for half a century in all types of industrial adhesives and a pioneer in the development of synthetic resin adhesives ... to engineer the one exact bonding agent to your specific job. Inquiries are invited – NOW!

Offices: 270 Madison Avenue, New York 16; 3641 So. Washtenaw Avenue, Chicago 32; 735 Battery Street, San Francisco 11, and other principal cities.

national ADHESIVES

EVERY TYPE OF ADHESIVE FOR EVERY TYPE OF ADHESION

Scott Co. Buys Fort Edward Mill

PHILADELPHIA, Pa., December 4, 1944—The Scott Paper Company, as announced briefly in last week's issue of the PAPER TRADE JOURNAL, has purchased the Fort Edward, N. Y., mill of the International Paper Company through its subsidiary, the Marinette Paper Company.

A step in Scott's post-war program of providing more production capacity for Scott products, and more and better jobs for Scott workers, the newly acquired mill is located five miles from the Glens Falls converting mill of the Marinette Paper Company on the Hudson River and Barge Canal, the announcement said.

The mill was shut down two years ago by International Paper Company. It is equipped with four Fourdrinier paper making machines and one cylinder type machine; a steam plant, and a fine filter plant. There are 37 acres of land and several mill and office buildings.

According to Raymond C. Mateer, vice-president of Scott Paper Company, and president of the Marinette Paper Company, the mill will provide an additional source of production for facial tissue and towels.

It is expected that production will be resumed in the mill during the coming summer, depending upon the supply of pulp available, Scott officials stated.

"We believe the purchase of the International mill is another step in our long-range program of promoting more jobs, better jobs and greater job-security for all of us," wrote Thomas M. McCabe, president of the Scott Paper Company, in a letter to all company personnel and to all members of the Scott organization now in the armed services.

Clark Products in Miniature Booklet

A better idea of the character and variety of Clark Products can be had from a vest-pocket booklet just announced by Clark Equipment Company of Buchanan, Mich.

Its 32 pages, printed in three colors, carry illustrations and brief descriptions of Clark celfor drills and reamers, electric steel castings, metal spoke wheels, front and rear axles for trucks and buses, transmissions, gears and forgings, fork trucks and industrial tractors, railway car trucks, blind rivets, trailer axle, and the newly developed booster engine for 1½-ton trucks. Also shown are air views of Clark's four plants at Buchanan, Battle Creek, Jackson and Berrien Springs, Mich.

A copy of this little book is offered to those interested, provided request is made on Company stationery to Clark Equipment Company, Buchanan, Mich.

Streambarker Bulletin

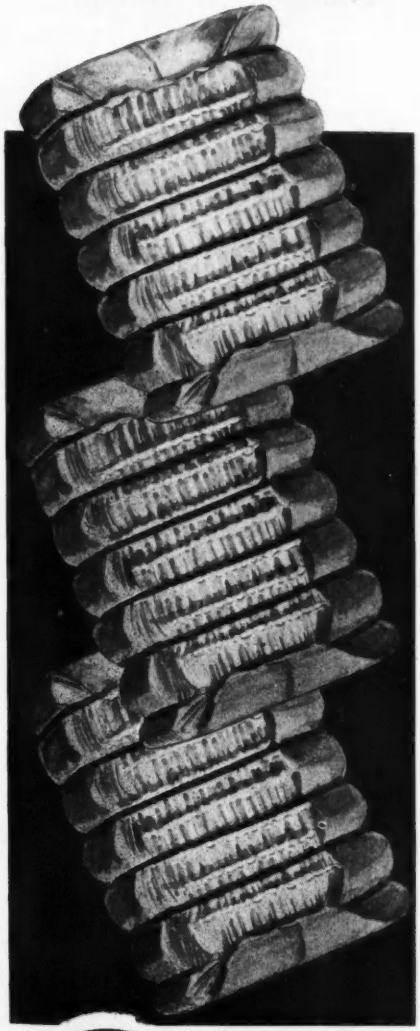
Complete details on Allis-Chalmers' Streambarker, the first practical hydraulic log barker ever designed for standardized production, have been released to the pulp and paper industry in a new illustrated bulletin.

For removing bark from any reasonably straight pulpwood logs 4 to 8 feet long, from 4 to 18 inches in diameter, by means of water under high pressure, the Streambarker unit does away with hand cleaning of wood, eliminates pulp loss from "brooming" of log ends, and produces cleaner wood for pulp than is possible with older type barkers.

The bulletin B6341, may be had upon request from Allis-Chalmers, Milwaukee, 1, Wisconsin.

Why RAYCO LINTER COTTON

Short-Cuts Pre-Cooking Overhead!



WHEN your paper is made from RAYCO Linter Cotton, your manufacturing process—and costs—start with the cooker. Rayco Linter Cotton is always uniform—one bale a duplicate of all the rest. It comes to you already sorted and graded by Railway Supply & Manufacturing Co., for many years an outstanding leader in the cotton linter field.

Being all-cotton, RAYCO Linter Cotton presents no problem of color elimination. And Rayco contains no adhesives, rayon or other contaminating material—nothing that needs to be removed.

Rayco Linter Cotton—selected, long-staple cotton linters—affords paper manufacturers a stable source of supply, simplifies and speeds production.

Other Fibers Also Supplied

Rayco chemists and fiber technicians have long made a close study of the *different* fiber requirements of paper manufacturers. In fact, in addition to supplying Rayco Linter Cotton, we shall be glad to hear from you, if you are using—or plan to use—any other cotton fiber.

THE RAILWAY SUPPLY & MANUFACTURING CO.
AND AFFILIATES
General Offices: Cincinnati, Ohio
Plants at: CINCINNATI, OHIO • FRANKLIN, OHIO • CHARLOTTE, N. C. • COVINGTON, TENN. • GREENSBORO, N. C.

Specialists in Grading, Marketing and Processing Cotton Fibers...

Awards for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 6, 1944—Barton, Duer & Koch Company has been awarded the contract for furnishing 55,000 pounds of blue tag board at 9.5 cents. Other awards announced for paper bought on the open market are as follows:

R. P. Andrews Paper Company will furnish 50,200 pounds of white cover paper at 9.46 cents and Barton, Duer & Koch Paper Company will furnish 40,000 pounds of green Bristol at 6.4 cents. Andrews also will furnish 400,000 pounds of white writing paper at 7.27 cents and Kalamazoo Paper Company will furnish 400,000 pounds of same at 7.08 cents.

Zellerbach Paper Company will furnish 80,000 pounds of white sulfite writing paper at 8.63 cents and Consolidated Water Power and Paper Company will furnish 710,000 pounds of white MC book paper at 6.10 cents. Barton, Duer & Koch Paper Company will furnish 5,000 sheets of white 100% rag paper at $33 per M. sheets and Port Huron Sulfite and Paper Company will furnish 25,000 pounds of canary sulfite manifold paper at $4.50 per ream. E. L. Ward Company will furnish 197,000 pounds of blue sulfite bond paper at 8.34 cents and Castenea Paper Company will furnish 235,000 pounds of white super-rotogravure paper at $17,272.50. Frank Parsons Paper Company will furnish 150,000 pounds of white CW writing paper at 7.56 cents and the Michigan Paper Company will furnish 51,558 pounds of the same at 7.27 cents. Frank Parsons Paper Company will furnish 60,000 pounds of V-mail paper at 6.5 cents and the R. P. Andrews Paper Company will furnish 22,600 pounds of Regal Tufwite tag-board at 9.5 cents. Parsons Paper Company will also furnish 150,000 pounds of white CW writing paper at 7.56 cents and the Stanford Paper Company will furnish 50,700 pounds of dull-coated book paper at 10.38 cents.

Brownville Paper Company will furnish 46,000 pounds of unglazed canary Rapier manifold paper at $2.39 per ream and the Central Ohio Paper Company will furnish 59,000 pounds of 50% rag white Government bond paper at 20.2 cents. Consolidated Water Power and Paper Company will furnish 150,000 pounds of Lakeland coated book paper at 6.05 cents and Bulkley Dunton & Co. will furnish 39,000 pounds of 50% rag litho-finish map paper at 19.5 cents.

Stanford Paper Company will furnish 19,200 pounds of fluorescent chart paper at 38 cents, and R. P. Andrews Paper Company will furnish 80,000 pounds of binders board at 4.14 cents. Halltown Paperboard Company will furnish 40,000 pounds of newsboard at $48 per ton and Barton, Duer & Koch Paper Company will furnish 21,000 pounds of 100% rag white index paper at 23.75 cents. The same firm will also furnish 67,200 pounds of same at 16.45 cents.

Beckett Paper Company will furnish 100,000 pounds of white book paper at 8.1 cents and Barton, Duer & Koch Paper Company will furnish 55,000 of white bond paper at 14.06 cents. Dill & Collins Company will furnish 80,000 pounds of white offset paper at 8.14 cents. Also the same firm will furnish 137,000 pounds of same at the same price and 108,000 pounds of same at same price.

Central Ohio Paper Company will furnish 39,250 pounds of white book paper at 6.98 cents and Kalamazoo Paper Company will furnish 100,000 pounds of white writing paper at 7.08 cents. The same firm will also furnish 300,000 pounds of same at the same price. Eastern Corporation will furnish 50,000 pounds of white bond paper at 9.31 cents and the same firm will also furnish 50,000 pounds of the same at the same price.

Paper Corporation of U. S. will furnish 32,072 pounds of white jutson paper at 10.2 cents and Paper Corporation will also furnish 2,880 pounds of same at same price. Columbian Paper Company will furnish 80,000 pounds of cream bristol at 6.6 cents and Michigan Paper Company will furnish 86,000 pounds of Canary French at 10.57 cents. The same firm will also furnish 38,000 pounds of same at the same price, and also 12,000 pounds of pink paper at the same price.

Consolidated Water Power and Paper Company will furnish 150,000 pounds of white book paper at 6.04 cents and the Marquette Paper Company will furnish 148,000 pounds of white writing paper at 6.85 cents. The same firm will also furnish 118,000 pounds of white book paper at 7.73 cents and Marquette Paper Company will furnish 152,703 pounds of Bible paper at 9.09 cents.

NO heavyweight is needed to lift these 10 tons—just an average 160 lb. man can do it easily and quickly with a Reading Multiple Gear Hoist. Spur gears, running in a bath of oil, are contained in a dust-proof and oil-tight housing making it one of the easiest hoists to operate. And long life and great efficiency are insured whether it is used indoors or out.

The hoisting mechanism is made of steel from "hook to hook" and range in size from 1/2 to 30 ton capacity. Regardless of load, a positive acting brake permits the load to be stopped in mid-air without danger of slipping back or falling.

Reading Multiple Gear Hoists have been relieving the manpower shortage in many industries by handling heavy loads surely, rapidly, and accurately. Write for complete information and engineering data for help in saving man-hours and boosting output.

READING CHAIN & BLOCK CORPORATION
2113 ADAMS ST., READING, PA.

CHAIN HOISTS • ELECTRIC HOISTS • OVERHEAD TRAVELING CRANES

READING HOISTS

Paper Division Supports Jewish Charities

Assurances of wholehearted support by the Pulp and Paper division in the 1944 appeal of the Federation of Jewish Philanthropies featured the annual dinner of the trade held Wednesday, November 29, at the Hotel Commodore. The affair was held to help 116 affiliated health and welfare agencies. More than 125 persons were present.

William Mazer of the Hudson Pulp and Paper Company, chairman of the division, presided. Norman S. Goetz, 1942-1943 Federation campaign chairman, was guest speaker. Morris Gintzler, honorary chairman, also addressed the group.

Mr. Mazer said the showing made at the affair by the industry was "highly satisfactory."

"In planning this event, we had hoped to make it outstanding in charitable affairs," he stated. "I am happy to announce the results met our expectations. On behalf of the committee, I wish to thank all who attended and contributed to this great philanthropy."

Mr. Goetz described the work of the 116 agencies comprising the Federation charitable network. He said the organizations care for all persons coming for aid without regard to race or creed.

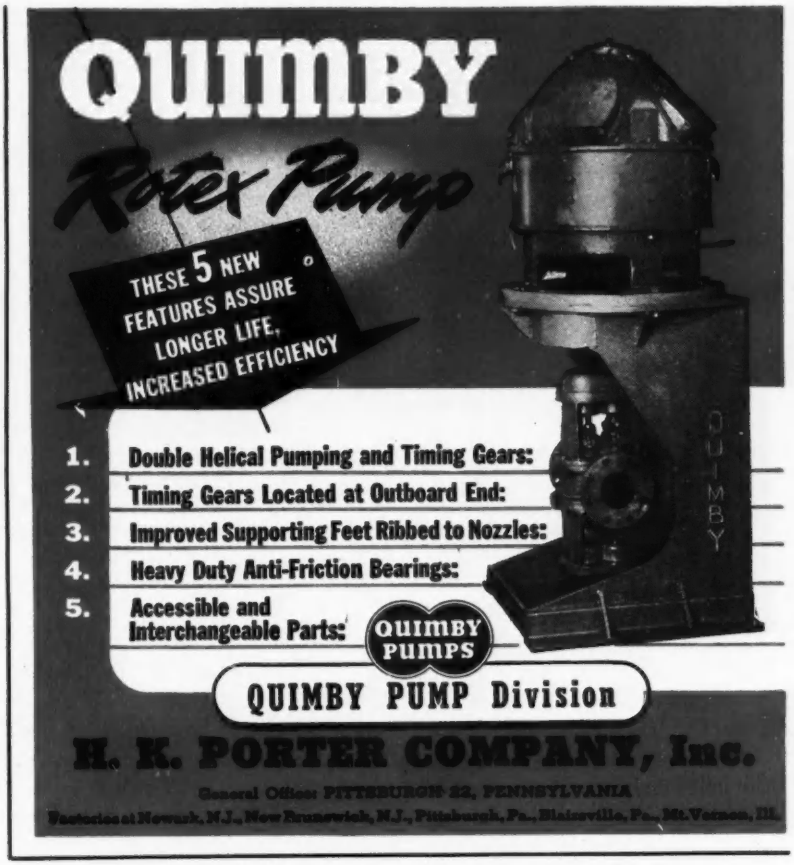
The agencies are now preparing to meet on-coming problems of the post-war period, Mr. Goetz disclosed. Included are help to the returned soldier, to the ex-war worker and their families and increased family welfare and juvenile recreational facilities, he added.

The drive in the industry will continue, according to Mr. Mazer, until every firm and individual makes a contribution. This major phase of campaign activity will be stressed in an effort to increase the amount contributed by the industry.

Cooperates with P. O.

The Baldwin Paper Company, Inc., New York, is sending to its customers and friends a complimentary copy of the latest revised 1944 edition of the Postal Zone Numbers Guide—in an effort to cooperate with local Post Office Officials to encourage mailers to always include the zone number on all their mail. The Guide consists of 62 pages enclosed in a Riegel's Leatherette Cover and lists the official zone numbers complete for all boroughs—Manhattan, Bronx, Brooklyn, Queens and Richmond — in New York City. It also includes a list of all Post Office Stations in each of the Boroughs, with their Zone Numbers; as well as a list of all cities in the United States where the Postal Zone Number System is used.

This is an exceptionally fine piece of good will advertising on the part of the Baldwin Paper Company, Inc., —because the Post Office insists that the Zone Number be included in all addresses, or mail delivery will be more or less delayed. Therefore, Baldwin's Official Postal Zone Numbers Guide will be welcomed and valued in any office, and kept handy for daily reference purposes.


QUIMBY
Rotex Pump
THESE 5 NEW FEATURES ASSURE LONGER LIFE, INCREASED EFFICIENCY
1. Double Helical Pumping and Timing Gears:
2. Timing Gears Located at Outboard End:
3. Improved Supporting Feet Ribbed to Nozzles:
4. Heavy Duty Anti-Friction Bearings:
5. Accessible and Interchangeable Parts:
QUIMBY PUMPS
QUIMBY PUMP Division
H. K. PORTER COMPANY, Inc.
General Office: PITTSBURGH 22, PENNSYLVANIA
Factories at Newark, N.J., New Brunswick, N.J., Pittsburgh, Pa., Blairsville, Pa., Mt. Vernon, Ill.

Big Backlog of Orders

INDIANAPOLIS, Ind., December 4, 1944—No improvement in the general over-all situation in the paper industry was seen in this territory last week by jobbers. Inventories for the most part continued very low and no amount of effort seems to be able to increase them. The trade here is about resigned to the fact that there will be no improvement the remainder of this year and likely none for the first quarter or two of next year. Demand from civilian sources continued heavy last week, with some of it unfilled. The backlog of orders is heavier than in the history of the trade and much of it will not be filled at all. Demand from customers having heavy priorities continued to take much of the available supplies.

Much of the heavy advance business for strictly holiday packaging has been placed and manufacturers have made deliveries insofar as it is possible. Demand for this sort of merchandise is heavier this year than last due to improved economic conditions and some orders can not be filled. Conditions in the box factories remain about the same. There has been no improvement in the labor supply situation. Thus far this year the plants have been fortunate in having had a minimum of labor trouble, but the labor supply is low and will remain so at least until after the war in Europe has been completed. While raw materials are none too plentiful, the production in local plants is dependent more on the labor situation than in raw materials. Given sufficient labor the plants could produce more even with raw materials as they are.

Publishers are taking their quotas of newsprint and advertising is as high as is possible under present quotas. The papers are turning down advertising every week. The last week saw a continued demand for tissues, with cleaning tissue stocks very low.

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.
Henry J. Berger, Editor

COMING EVENTS IN PAPER INDUSTRY

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

Empire State Section. Technical Association of the Pulp and Paper Industry—Second Thursday of each month at the Woodruff Hotel, Watertown, N. Y.

Chicago Professional Paper Group—Third Monday of each month except July and August at Chicago Bar Association, Chicago, Ill.

PULPWOOD SITUATION CRITICAL

Although increasing pulpwood receipts have been a most encouraging factor for many months in the pulp supply situation, late reports are less favorable. The very heavy demands for essential military and other government needs still make the supply uncertain for civilian requirements. Sufficient trucks to haul domestic pulpwood and enough box cars to bring in pulpwood from Canada are the chief hindrances reported. The wood situation as charted by the Forest Products Bureau of the War Production Board, indicates total receipts are not much greater than consumption, with the total inventory figure higher. The consumption trend in the South on October 1 was in excess of receipts and the trend downward. In the Pacific Northwest, the trend of receipts was below consumption with inventories rising.

Production of domestic pulpwood for the first nine months of 1944, reported by the Department of Commerce, totaled 12,860,000 cords, compared with 10,937,000 cords in 1943, and with 13,307,000 cords in 1942. This is an increase of 17.6% in 1944 over 1943. Receipts in the Northeast declined 1.2%, increased 19.4% in the Appalachian region, 16.1% in the South, 53.9% in the Lake states, and 11.6% in the Pacific Northwest. Mill consumption of wood declined 5.0% in the Northeast, increased 1.6% in the Appalachian region, 15.0% in the South, 4.8% in the Lake states, and 8.8% in the Pacific Northwest. Inventories in the Northeast decreased 19.3%, increased 48.8% in the Appalachian region, 123.9% in the South, 26.8% in the Lake states and 31.0% in the Pacific Northwest. Total inventories rose 18.6% in the first nine months of 1944 above the same period in 1943.

In its latest summary the Department of Commerce states that, the pulpwood situation at the end of the third quarter was much better than had been anticipated some months ago, and barring unforeseen circumstances, the domestic goal of 14,000,000 cords this year will be surpassed. The Northeastern and Pacific Coast areas remain in a difficult position owing to inventory depletions and, above all, the national flow of pulpwood to mills must be maintained at a steady rate because inventories in general will not sustain production very long. Because of continued high demands for lumber the Pacific Northwest will probably continue to encounter a general shortage of logs delivered to both pulp mills and sawmills. Railroad transportation has encountered an increasing shortage in cars, which resulted in the recent ODT order sharply raising demurrage charges. This is causing concern to a number of pulp and paper companies, especially in connection with the unloading of pulpwood; in some instances it is running up demurrage costs to several thousand dollars a month.

In its latest report of November 27, 1944, the War Production Board stated that total receipts of pulpwood at U. S. mills during October approximated 1,319,000 cords, or 5% below that of October 1943. The decline in October receipts may have resulted from public over optimism concerning the prospect of an early termination of the European war, officials said. Increased pulpwood production efforts must be made by farmers, the pulp and paper industry and cooperating governmental agencies, the WPB pointed out. It is vital, the report stated, to the war effort that U. S. pulpwood production requirements for military and essential civilian items produced by the paper and pulp industry be successfully met. This cannot be fulfilled unless increased quantities of pulpwood, of the desired species and specifications are produced and delivered to the mills.

The WPB outlined the pulpwood situation as follows: October mill receipts of domestic pulpwood were about 6% below those of October 1943. The Northeast and Lake State mills are in urgent need of the long-fibered species (spruce and fir). In the South and Appalachian areas increased production of southern pine is required. Receipts of pulpwood in the first ten months of 1944, totalled about 12,729,000 cords. This amount is about 18% above that of the corresponding period last year and approximately that of 1942, but represents a decline of 3% as compared with the nine-month total which was 21% above the first nine months of 1943. Northeast region receipts in the ten-month period were about 3% below 1943 and 10% below 1942. October production of pulpwood by farmers was 11% greater than during October 1943 and company-produced wood was about 13% lower than during the like period in 1943. Imports of Canadian pulpwood in the Northeast region were about 116,300 cords or approximately 39% more than in the same period in 1943.

The report goes on to say that inventories in the Northeast region are about 17% below those of October 1943. This represents a reduction in inventory of about 37% below what might be considered

normal from October 1941 to date. This reduction in inventory position is critical. The manpower situation is by far the greatest factor affecting the volume of pulpwood output in the Northeast region. October receipts in the Appalachian region were about 20% below those of 1943. If this downward trend is not checked, the report points out, a serious situation threatens in this area. Inventories in this region may have to be drawn upon heavily to keep up production. In the South receipts of pulpwood in October were about 2% below those of October 1943. Unfavorable weather, diversion of prisoners of war to harvest activity, and the employment of farmers full-time on harvests is responsible for the decline in receipts in this area. Inventories in this region dropped about 22% in October. However, some mills suffered much heavier inventory declines than the over-all average and the production of kraft paper and board was consequently reduced at such mills. The situation in the South may become serious unless the wood positions of some southern mills are much improved by November receipts.

The report points out that receipts of pulpwood in the Lake States of 123,600 cords was about the same as in October 1943. Inventories are about 21% above 1943. In the Pacific Northwest area, domestic pulpwood receipts in October totalled 211,000 cords, an increase of about 9% over October 1943. This improvement is attributed to good logging weather. However, the manpower situation in this region is not improving and it is anticipated that it may become worse in succeeding months, the WPB said.

Binney & Smith Co. Form 25-Year Club

Organization of the Binney & Smith Company "25 Year Club" was completed recently at a meeting and luncheon at the Uptown Club in New York where 58 members were enrolled representing chapters in New York and Easton, Pa. Included in the membership were C. P. Morris, manager of the Philadelphia office who has been with the company for 45 years, Miss M. C. Falco, of the crayon department, with a record of 41 years and John Stead, vice-president in charge of operations at Easton who has been associated with the Binney & Smith Company for 40 years.

Some of the "youngsters" present were H. K. de Milt who joined up in 1906; F. R. Cantizlaar, treasurer, in 1908; Norman Lee Smith, export sales manager and A. F. Kitchel, president, in 1909.

As of this year, the roots of Binney & Smith are 80 years old, dating from 1864 when Joseph W. Binney established the Peekskill Chemical Works for the grinding, packaging and distribution of charcoal and the production of lamp black. In 1880 the firm of Binney & Smith was formed in New York by Edwin Binney and C. Harold Smith. One of their notable accomplishments was their pioneering work in Pennsylvania in connection with the production of the then new carbon black from natural gas.

Today Binney & Smith Company have thirteen offices in the United States and Canada. They have an office in London, and will reopen as soon as conditions permit, offices in important cities throughout the European continent.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1944		Corresponding Weeks—1943	
Oct. 21	91.6	Oct. 23	88.8
Oct. 28	92.7	Oct. 30	88.5
Nov. 4	94.1	Nov. 6	89.9
Nov. 11	92.3	Nov. 13	89.6
Nov. 18	91.7	Nov. 20	91.4
Nov. 25	*90.3*	Nov. 27	87.6

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1943	87.2	88.9	89.5	88.7	91.4	84.8	84.3	91.0	88.3	89.6	89.6	82.0	87.8
1944	89.6	89.6	89.2	88.8	89.7	90.7	81.1	92.5	90.1	*93.6*			

COMPARATIVE YEARLY SUMMARIES

	1937	1938	1939	1940	1941	1942	1943	1944
Year to Date	82.6	71.3	82.6	86.0	97.0	91.5	87.6	*90.3*
Year Average	79.8	71.5	83.4	85.6	97.4	90.4	87.8	

*Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1938	56	63	63	60	60	59	59	69	70	73	67	61	64
1939	65	73	76	74	69	73	68	77	82	91	88	77	77
1940	78	75	74	76	82	85	77	79	78	85	83	77	78
1941	81	88	89	89	91	94	92	98	95	99	98	90	92
1942	102	101	101	95	82	72	68	75	76	81	82	77	84
1943	86	88	94	94	96	94	89	96	94	94	93	87	93
1944	90	96	95	96	96	96	85	96	92	*95*			

Week ending Oct. 21, 1944—94
Week ending Oct. 28, 1944—95
Week ending Nov. 4, 1944—96
Week ending Nov. 11, 1944—96
Week ending Nov. 18, 1944—96
Week ending Nov. 25, 1944—*91*

†Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

Issues New Ruling on Kraft Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 6, 1944—Manufacturers of Kraft wrapping and bag paper, and grocers' and variety bags may apply for individual adjustment in their ceiling prices if two conditions can be met, the Office of Price Administration announced today.

These two conditions are: (1) The existing ceiling price is causing the applicant substantial hardship, and (2) continuance of the applicant's production of the commodity is required to meet a military or essential civilian need.

This action, effective December 7, 1944, is taken because it appears that existing ceiling prices may threaten to impede the continued production of these items by some firms, OPA said.

Any increases granted manufacturers by individual adjustments will be automatically passed on by wholesalers, except where these items are used by wholesalers for packaging purposes. The papers and bags affected are not sold at retail but are used exclusively by retailers for packaging purposes. Any increase in the costs of retailers that result from these individual adjustments will be very slight, OPA said.

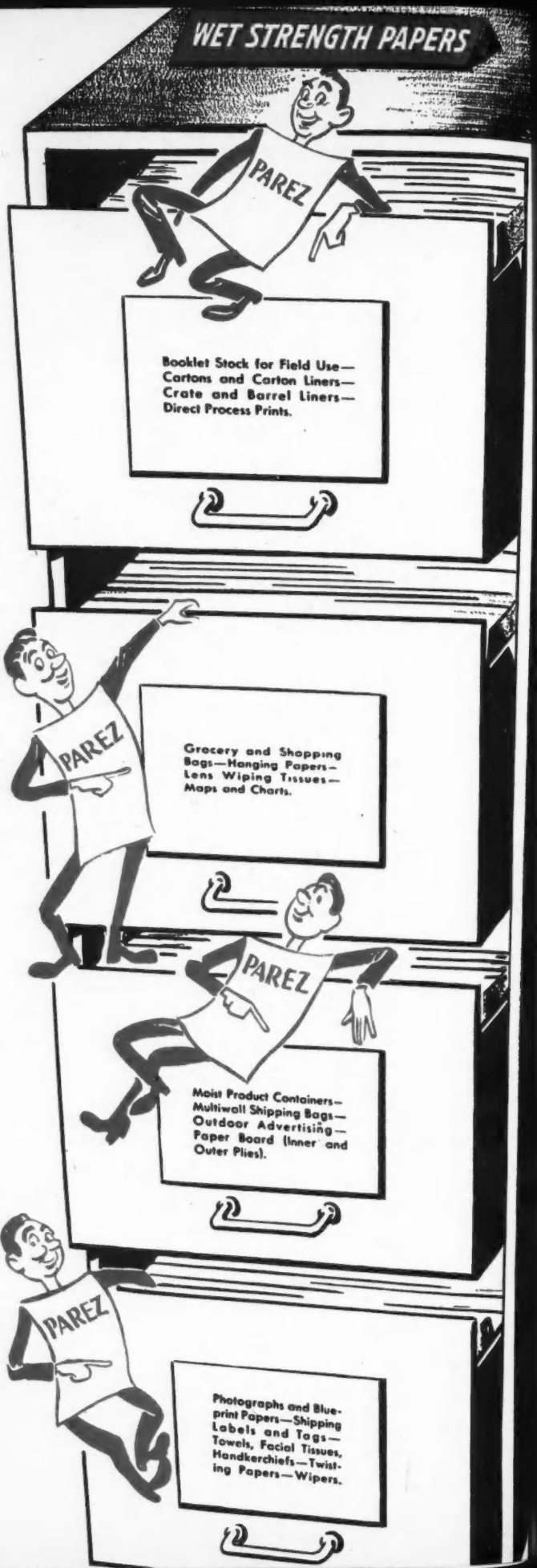
E. de Vries Co. To Be Sole Agent

The Purves Machine Wire Company, Inc. of Holyoke, Mass., manufacturer of Fourdrinier wires, announces the appointment of the E. de Vries Company of 220 East 42nd street, New York, as its sole sales agent for the United States. The E. de Vries Company has also been appointed sole export agent for all world markets.

All domestic inquiries for Purves products will be handled by the New York office of the E. de Vries Company. Export inquiries will be handled by the New York and London offices.

FOR NEW LEADS TO NEW BUSINESS...

PAREZ*



Cyanamid's melamine paper resin, one of the PAREZ* group, has opened whole new fields of usefulness for paper by adding long-lasting, improved wet strength characteristics.

PAREZ, when converted to an active colloid, by a method developed by Cyanamid research, and added to paper stock, increases the dry as well as the wet strength of paper†. It is, therefore, frequently possible to reduce the basis weight, with the result that the production of a given yardage of paper costs no more or perhaps even less than that of untreated paper. No special machine equipment is needed. PAREZ colloid is added directly to the fibres prior to the formation of the web. Beating time may be shortened, improvement in dimensional stability under varying humidities is made possible, basis weights may be lowered, tensile strength and folding endurance increased.

Trial run test data on use of PAREZ from various paper mills covering kraft wrapping, glassine, blueprint, butter wrap, absorbent paper and various high-grade specialty papers showed that wet tensile and wet mullen had been improved several hundred per cent. Also, that increases in dry tensile strength, produced by 2%-4% of PAREZ, ranged from 5% up to 40% and bursting strength from 10% to 60%.

Because of the qualities imparted by PAREZ, paper is destined to do more and better jobs than it has ever done before. Full details on PAREZ are available from your Cyanamid representative or any Cyanamid office. Your inquiry will receive prompt attention.

*Trade-mark of American Cyanamid & Chemical Corporation applied to its synthetic resins for use by the paper industry.

†Developed by Cyanamid, a new patented process utilizing a melamine resin; provides paper manufacturers with an effective method of increasing both wet and dry strength qualities in paper. Cyanamid's melamine resin, PAREZ, has been prepared for use in the process.

AMERICAN CYANAMID & CHEMICAL CORPORATION

(A Unit of American Cyanamid Company)

30 ROCKEFELLER PLAZA • NEW YORK 20, N. Y.

DISTRICT OFFICES: Boston, Mass.; Philadelphia, Pa.; Baltimore, Md.; Charlotte, N. C.; Cleveland, Ohio; Chicago, Ill.; Kalamazoo, Mich.; Detroit, Mich.; St. Louis, Mo.; Azusa, Calif.; Seattle, Wash.; In Canada: Dillons Chemical Company, Ltd., Montreal and Toronto.

Waxes • Wax Sizes • Rosin Size
Synthetic Resins • Casein • Alum
Sulphonated Oils • Fillers • Defoamers
Soda Ash • Caustic Soda • Salt Cake
Acids • Clays • Satin White • Aerosol*
Wetting Agents • Calmiere
(Calcium Carbonate) and
other Paper Chemicals
*Reg. U. S. Pat. Off.

Section of the
TECHNICAL ASSOCIATION
OF THE PULP & PAPER INDUSTRY
122 E. 42nd St., New York 17, N. Y.
Edited by R. G. Macdonald, Secretary

Air Resistance of Paper*

Corrected TAPPI Tentative Standard T 460 m-43

This method is to be used for testing paper and paper products which permit the passage of 100 ml. of air in from 2 seconds to 30 minutes, except those which cannot be securely clamped against surface and edge leakage, such as crepe and corrugated papers.

Apparatus

1. *Instrument.* The instrument shall consist of an outer cylinder which is partly filled with oil, and an inner cylinder, having a closed top, sliding freely in the outer cylinder. Air pressure for the test is provided by the weight of the inner cylinder. The instrument shall be arranged to furnish air pressure to the paper sample, held between clamping plates having a circular orifice of 1.00 square inch. The clamping plates may form the top of the inner cylinder, or be mounted in the base of the instrument, the latter being preferable. The surfaces of the clamping plates shall be flat within 0.0001 inch and the clamping device shall be so arranged that the sample may be securely clamped against side leakage of air.

The outer cylinder shall be 10 inches high and shall have an internal diameter of 3.25 inches. It shall preferably be equipped with four slender bars, each 7.5 inches long, 0.12 inch wide, and approximately 0.06 inch thick, mounted vertically and equidistantly on the inner surface of the outer cylinder, to act as guide tracks for the movable cylinder. The movable cylinder shall be graduated in units of 50 ml. and shall have a total range of 350 ml. It shall be 10 inches high and shall have an external diameter of 3.00 inches and an internal diameter of 2.90 inches. It shall weigh 567 $\pm$ 0.5 grams, producing at the zero reading a static pressure of 4.9 inches of water.

2. *Oil.* The oil used with the apparatus shall be a lubricating oil having a viscosity of 60 to 70 seconds Saybolt Universal at 100°F. (37.8°C.) and a flash point of not less than 275°F. (A light spindle oil is suitable for this purpose.)

Note: Oil is used in preference to water because it does not corrode aluminum, and because it does not affect the moisture content of the sample. The oil should not contain any essential oil or other easily volatile oil and, for that reason, a minimum flash test is specified.

Calibration

The instrument shall be tested for air leakage by clamping a thin piece of hard-surfaced, air-tight material, such as tin foil or cellophane, between the plates. The leakage shall not exceed 50 ml. in 5 hours.

Test Specimen

The test specimen shall be approximately 1.75 inches wide and 5 inches long, except that specimens of any size larger than 1.75 inches in both directions may be used in the apparatus having the clamp in the base. The specimens shall be conditioned for testing according to TAPPI Standard T 402 m.

Procedure

Make the test in an atmosphere conditioned according to TAPPI Standard T 402 m. Place the instrument on a level surface so that the cylinders are vertical. Fill the outer cylinder with oil to a depth of approximately 5 inches, as indicated by a ring marked on the inner surface of the cylinder.

For the instrument having the clamp in the top of the inner cylinder, raise the inner cylinder and hold in a raised position with one hand, clamp the specimen between the clamping plates, then lower the inner cylinder and allow it to float in the oil. Alternatively, the inner cylinder may be removed, the specimen clamped, and the cylinder replaced in the outer cylinder, lowering gently until it floats in the oil.

Note: The proper procedure for clamping the specimen is to hold the inner cylinder in a raised position with one hand, and alternately tighten the knurled nuts so that the clamping pressure will be equal on both sides; or, the inner cylinder may be moved and replaced in the outer cylinder after the paper has been clamped. If only one nut at a time is turned down, the clamp will not bear evenly on the specimen, and air leakage will occur between the surfaces of the clamp and the specimen.

For the instrument having the clamp in the base, first raise the inner cylinder until its top rim is supported by the catch, and then clamp the specimen between the clamping plates. Then lower the inner cylinder gently until it floats.

When a steady movement has been attained, measure with a stopwatch, or other timing device, the number of seconds required for the first two consecutive 50-ml. intervals to pass the rim of the outer cylinder, starting at the zero mark. With very resistant papers the reading may be taken at the end of the first 50-ml. interval and the results doubled. With very open or porous papers a larger volume of air may be read on the inner cylinder and converted to the 100-ml. standard quantity. In cases where it is not possible to obtain a steady movement of the inner cylinder before the zero mark is reached, the test may be started at the 50-ml. mark.

Note: Precautions should be taken to avoid subjecting the apparatus to vibration, as this increases the rate of air displacement.

Test at least five samples with the felt side up and

* This method has been approved as a tentative standard by the Paper Testing Committee. Criticisms are earnestly requested and should be sent to R. G. Macdonald, Secretary, Technical Association of the Pulp and Paper Industry, 122 E. 42nd St., New York 17, N. Y.
This method has been adopted by the American Society for Testing Materials under designation D 726.

five samples with the wire side up, and average the results. If the mean value of the highest and lowest reading differs from the average of all the readings by more than 10%, additional samples shall be tested until there is agreement within these limits. An irregular sheet of paper may, therefore, require more than ten tests. An isolated very high or very low reading, which is not repeated in duplicate, shall be discarded when a consistent average is obtained without the abnormal reading.

Report

The average number of seconds required for the displacement of 100 ml. of air through an area of 1 square inch of the paper shall be reported as the Air Resistance.

Reproducibility of Results

The agreement to be expected between duplicate series of independent tests is approximately as follows:

Air Resistance *seconds*	Reproducibility %
40	5
100	6
200	8
300	10

Additional Information

American Society for Testing Materials Designation D 202-38T, Air Resistance, describes the apparatus having an open-top inner cylinder.

Reference

"First Report of the Paper Testing Committee to the Technical Section of the Papermakers' Association of Great Britain and Ireland," pp. 62-66 (1937).

Monograph on Paper and Paperboard

This publication, just issued by the American Society for Testing Materials through the work of its technical committee D-6 on paper and paper products, discusses the significance of a more commonly used test and defines terms and nomenclature of properties of paper related to these tests. Following a discussion of the nature of paper properties there is a chapter covering the action of water on paper and its significance; finally, an extensive section covers definition of terms, nomenclature, and properties of various classes of paper and paperboard. In this part there is discussion on the following: Bond and writing paper, envelope and printing papers, paper towels and toilet tissues, condenser paper, bristols, paperboard, building and wrapping papers.

A major portion of the book discusses tests and their significance, including the following: Acidity and pH, ash (mineral content), basis weight, bursting strength, color compressibility, hardness and softness, fiber identification, folding endurance, foreign material (dirt), formation, imperfections, ink receptivity, machine direction (grain direction), moisture content, opacity, porosity or air permeability, resiliency or elasticity, rosin size, surface bonding strength, surface texture, tearing strength, tensile breaking strength, thickness and density, water resistance, and wire and felt sides. Following many of the discussions there are listed significant references. A helpful part of the monograph is a list of the A.S.T.M. and TAPPI methods of testing paper.

A detailed index completes the 120-page publication.

The publication was edited by Roger C. Griffin, and cooperating were many other authorities in this field, including, C. C. Heritage, Chairman of Committee D-6's Subcommittee on Significance of Test Methods, and L. S. Reid, Chairman of the main committee. Copies of the publication in heavy paper cover can be obtained from A.S.T.M. Headquarters, 260 S. Broad street, Philadelphia 2, Pa., at $1.50 each, with reduced prices on orders in quantity.

New England TAPPI To Meet in Boston

A meeting of New England Section of the Technical Association of the Pulp and Paper Industry will be held in the Georgian Room of the Hotel Statler in Boston, Mass., on Friday evening, December 15, 1944. There will be an informal get-together in the Georgian Room at 4:00 P.M. Dinner will be served *promptly* at 6:00 P.M. The meeting will follow immediately after dinner.

The subject for the meeting is the "Post War Competitive Position of Paper," and a Panel Discussion will be held on this topic. The panel includes the following men and industries: W. F. Boudreau, Reynolds Metals Company, representing Metal Foils, will show a film entitled "A Recital of Faith"; D. G. Magill, American Can Company, representing Containers; A. F. Wendler, E. I. duPont de Nemours Company, representing Cellophane; P. N. Hills, Bird & Son Inc., representing Building Materials; Carl Pottenger, American Cyanamid Company, representing Plastics; George Alexander, General Electric Company, representing Plastics; Eugene Judd, Goodyear Tire and Rubber Company, representing Rubber.

Each man on the panel will outline the use of paper in his own field (particularly unusual applications) and will discuss the competitive position of paper relative to his own products, citing postwar fields in which paper may be used in conjunction with his products. Following the formal presentation by the Panel, there will be an opportunity for questions from the floor and general discussion.

The committee in charge, Messrs. Strovink, Barker and Child, have arranged this excellent program and report a great deal of enthusiasm is developing about it. It should particularly appeal to sales managers and other paper mill executives, as well as to technical men and converters.

Members planning to stay at the Statler overnight should make hotel reservations direct with the hotel immediately and should notify F. A. Strovink, Hotel Statler, Boston, Mass. of their intention to be present.

Pulp and Paper Course at Maine

In response to requests from discharged veterans and others, the University of Maine, beginning with the winter and spring terms of 1945, will offer courses in pulp and paper technology designed to give a practical knowledge of current methods and practices in the pulp and paper industry. High school chemistry is the only prerequisite for these courses. The subject matter will be of particular value to men engaged in sales or production work in pulp and paper and allied fields.

During the winter term, January 2 to March 23, 1945 courses will be given in pulp technology and pulp and paper testing. In the spring term, April 2 to June 22 the courses will include paper technology, pulp and paper manufacture and pulp bleaching and coloring. Further information may be obtained from Dean Paul Cloke, College of Technology, University of Maine, Orono, Maine.

Study of the Chemical Recovery in the Monosulphite Pulping Process

By Frederick B. Schelhorn[1]

Abstract

Material balances on the white and green liquors of the sodium monosulphite pulping process showed that the chemical composition of these liquors was accounted for by their content of sulphide, sulphite, sulphate, thiosulphate, and carbonate. On the basis of these balances, it was concluded that, within the limits of experimental error, the constituents of these liquors were accounted for by the compounds analytically determined.

Cooks made with liquors corresponding to recovered waste liquors and at a constant total reducing power showed a decrease in pulp brightness with successive recovery operations. However, the unscreened yields and permanganate numbers correspondingly increased—an indication of incomplete pulping. Hence, this dulling might be attributed, in some measure, to less complete pulping.

Pulps at constant pulp quality showed a decrease in brightness with increasing concentration of thiosulphate in the cooking liquor. The reaction rate was decreased and penetration of the cooking liquor into the chips was retarded.

It was concluded that the reaction of the sulphite proceeded more rapidly than that of the thiosulphate. For high concentrations of thiosulphate, the curves for the relation between brightness and pulp quality at different cooking times showed a maximum which was concluded to be the point at which the predominance of the sulphite reaction was initiated.

The lignin determination showed excellent agreement with the permanganate numbers of the pulps, although the thiosulphate content varied widely.

Pulps obtained from sulphited recovered liquors agreed closely in brightness with those prepared from liquors made with pure chemicals similarly sulphited. However, pulps obtained from liquors having comparable analyses but prepared from suitable pure chemicals so that the sulphiting operation was unnecessary, had a much higher brightness. Thus it is probable that the cause of the pulp dulling was the sulphiting operation rather than the smelting operation, if the liquor contained appreciable quanties of sulphide.

On the basis of analytical data, it is believed that iron and sulphur in the pulp had no relation to the dulling phenomenon.

Historical

Neutral Sulphite Process

Although the earliest use of sodium monosulphite (commonly designated as neutral sodium sulphite) for the production of cellulose from naturally occurring materials is somewhat obscure, Cross *(1)* in 1880 referred to it as one of four pulping methods and in the same year was granted a patent *(1a)* in which he disclosed the complete process. Pulping was then considered to be a process by which the natural lignocellulose was hydrolyzed and the components prevented from recombination by fixing the reactive groups of the lignin in chemical combination with the pulping agent. These reactive groups were thought to be acidic and aldehydic; consequently, the sodium sulphite should possess excellent pulping qualities because the base could combine with the acidic groups of the lignin, whereas the sulphite residue would be free to react with the aldehydic groups. It was found, however, that sodium sulphite was a weak pulping agent and required increased temperature and concentration to effect successful digestion. Cross attributed this fact to the feeble hydrolyzing power of the salts and suggested the use of temperatures in the range of 160 to 180° C. to increase the reaction velocity.

The process was given its earliest commercial impetus by Schacht *(2)* who patented a process utilizing monosulphite in the pulping of straw and claimed several advantages over the common pulping methods. Increased yields of 15 to 20% over the bisulphite method were obtained, and the objectionable odors associated with the alkaline process were eliminated. Schacht prepared the cooking liquor by passing sulphur dioxide into a crude soda solution until the latter was nearly saturated. The residual carbonate present was then causticized with lime to yield caustic soda. This residue of free caustic was needed to solubilize silicate and alumina found as inherent components of the raw material (straw), and it was suggested that it be kept as low as would be conducive to successful operation. This process was evidently tested on a commercial scale, but soon fell into disuse because of its faulty recovery system with resultant high raw material cost.

Sodium monosulphite was first employed in the pulping of wood by Drewsen *(3)*, who patented a process for its utilization in the preliminary penetration of chips which were to be subsequently pulped by the bisulphite process. The main objects claimed for this process were the elimination of the offensive odor and the extremely corrosive action on the digester by the bisulphite solution and, at the same time, an improvement in the penetration of the liquor into the chip so that burning would be prevented. Drewsen *(4)* further patented the application of the neutral sulphite process to the pulping of cornstalks, bagasse, and straw, and also claimed priority *(5)* for the cooking of wood (poplar) by this method (which was carried out as early as 1914), although the process was never patented.

During the decade following the last war, considerable interest was aroused in the possible commercial application of sodium monosulphite in the production of wood pulp. One of the reasons for this was the fact that, at that time, the commercial bleaching of kraft pulp was not feasible and there was a ready

A portion of a thesis submitted in partial fulfillment of the requirements of The Institute of Paper Chemistry for the degree of Doctor of Philosophy from Lawrence College, Appleton, Wis., May, 1943. This work was carried out under the direction of D. Romund Moltzau and Sidney D. Wells.

[1] Present address, Brown Company, Berlin, N. H.

market for pulps of high physical strength which possessed high brightness and could be bleached by the existing methods. Neutral sulphite pulp is frequently characterized, especially in the sales literature, as having "the strength of kraft and the color of sulphite."

Applicability to a wide range of wood species and the use of iron digesters in the cooking process, because of the alkaline liquors, were other factors of economic and technical interest.

The Keebra process of Bradley and McKeefe, which was developed at about this same time, contributed to the general interest in the neutral sulphite process. The Keebra process *(6)* utilized, in addition to the monosulphite, regulated amounts of other sodium salts—namely, bisulphite, sulphide, hydroxide, thiosulphate, carbonate, or bicarbonate. These individual cooking methods were then known as Acid Keebra, Thiokeebra, Semikeebra, etc., and were all duly protected by a complex system of patents. The inventors claimed advantages in the pulping of aspen, as well as other deciduous and resinous woods. Subsequently, the monosulphite process was utilized in the pulping of shortleaf pine and Douglas fir by Chidester and McGovern, *(8)*, and was further patented by Drewsen in its application to deciduous woods *(9)* and resinous woods *(10)*. The method has been successfully utilized in the pulping of many straws and grasses *(11)*; Bray and Peterson *(12)* used flax straw, Clark *(13)* employed esparto, and Hilpert, Wolter, and Hofmeister *(14)* used the neutral and alkaline sulphite processes for the digestion of esparto and winter wheat straw. Finally Horváth *(15)* further studied the use of monosulphite in pulping cornstalks, and Lynch and Goss *(16)* found certain advantages in the production of bagasse cellulose.

Another very important growth of the neutral sulphite process has been in the field of semichemical pulping. Rue, Wells, Rawling, and Staidl *(17)* have worked out a process which included an impregnation with monosulphite, followed by cooking and subsequent mechanical disintegration. This process is now in commercial operation on extracted chestnut and other hardwoods for the production of the so-called semichemical pulps. The advantages of such a process are the low chemical consumption and high yield, and the pulp is suitable for medium and low-grade printing paper and board. Sodium sulphite is an excellent reagent for this method because of its ready solubility, neutrality, and reducing properties.

The effect of cooking variables in the pulping of black gum has been studied by Bray and Eastwood, who investigated the effect of the ratio of sulphite to bicarbonate on the pulp properties *(18)* and the effect of digester temperature on the rate of delignification *(19)*. Rawling and Staidl *(20)*, pulping aspen with neutral sulphite, found that materials other than lignin were not removed until a temperature of 170° C. was attained. This is in sharp contrast to the soda process, in which cellulose attack is initiated at 140° C. The results of Rawling and Staidl are in good agreement with the pulping temperatures originally stipulated by Cross.

Recovery Process

Because of the high chemical concentration required for the successful application of sodium monosulphite to the pulping of fibrous materials, it is evident that a suitable process for the recovery of the pulping agent, particularly the sodium salts, is of primary importance if the process is to compete with other pulping processes. The ideal situation would be a completely closed cycle involving only the use of a small quantity of make-up chemical in the production of the fresh cooking liquor. This was the goal of Bradley and McKeefe who have proposed, in a series of patents, several possible methods of disposal of the Keebra waste liquor so that the valuable constituents could be readily recovered.

An early patent *(21)* by these inventors suggested sulphiting the waste liquor so that the organic materials are precipitated, with the production of a suitable cooking liquor which may be causticized if desired. Evidently the amount of organic matter removed in this way is rather small, because they further proposed that the liquor be concentrated and sodium sulphite be allowed to crystallize from the solution *(22)*. Finally, gypsum is added to the neutral or alkaline solution. Calcium sulphite is precipitated with the formation of sodium sulphate, which can then be separated by further concentration and crystallization. The calcium sulphite is treated with sodium sulphate in a solution made acid by the addition of niter cake or sulphur dioxide. Under these conditions, the original reaction is reversed with the production of a suitable sodium sulphite cooking liquor.

Bradley and McKeefe *(23)* have proposed several calcination methods in which the waste liquor is never fused; instead, it is dried and heated in a stream of air so that sulphur compounds are removed. The sodium salts (essentially carbonates) are then obtained by leaching the incinerated mass.

Smelting the waste liquor offers a logical method for the recovery of the inorganic constituents, because (a) the yield is high, even in practice, and (b) at the same time considerable quantities of heat are liberated, which substantially decreases the mill fuel and power costs. When monosulphite waste liquor is subjected to this process, a large quantity of sulphide is produced which forms thiosulphate during the subsequent sulphiting operation. Such a method has been patented by Bradley and McKeefe *(24, 25)* in its application to the Keebra process. By mixing waste liquors from an alkaline process with those of the neutral sulphite process *(26)*, a residue is obtained after smelting which has a smaller ratio of sulphide, so that less thiosulphate is subsequently produced.

Because the normal constituents of the smelting process (sodium sulphide and carbonate) will yield a liquor after causticization which is normally used in the alkaline sulphate process, Bradley and McKeefe have obtained a series of patents based on a cross recovery between the two processes *(27-29)*. Thus, the green liquor obtained from the monosulphite digestion is causticized and used in the sulphate process. It was proposed in these patents that the residual liquors from the sulphate recovery process might be sulphited and utilized in the monosulphite process.

In an effort to reduce the sulphite content resulting from fusion of these waste liquors, Drewsen *(30)* proposed the addition of 10 to 30% of lime to the hot, concentrated liquor when the make-up soda is added in the form of niter cake. Fusion of this mixture produces calcium sulphide and predominantly sodium carbonate, which is leached from the fused mass. The calcium sulphide may then be suspended in water and converted, by the introduction of carbon dioxide, into calcium carbonate with the liberation of hydrogen sulphide. The escaping gas can be burned to form sulphur dioxide needed in the sulphiting

operation, and the precipitated calcium carbonate may be calcined to produce the lime originally admixed with the waste liquor.

Haglund *(31)* used a roasting step following the usual fusion so that the final products are sulphate, sulphite, and carbonate with only traces of unreacted sulphide. The roasting was carried out in the neighborhood of 500° C., which is substantially above the decomposition temperature of sodium thiosulphate (240° C.). The resultant liquor was divided into two portions, one of which was subjected to treatment with sulphur dioxide after the addition of finely crushed calcium carbonate. The action of sulphur dioxide on the limestone resulted in the formation of calcium bisulphite with the liberation of carbon dioxide. This bisulphite, in turn, reacted with the sodium sulphate in the solution and formed sodium bisulphite and calcium sulphate. The remaining portion of the original liquor was then added to neutralize the bisulphite and remove any calcium which might have been present because of the solubility of the calcium sulphate.

The removal of sulphide by the use of water gas was proposed by Rawling *(32)*. This was accomplished by introducing air and steam into the furnace at a suitable temperature so that it reacted with the carbon residue in the waste liquor. The sodium sulphide was thus converted to carbonate with the elimination of hydrogen sulphide, and the resultant ash was free of combined sulphur.

Billington, Chidester, and Curran *(33)* have demonstrated on a laboratory scale a very interesting process which can best be described in a series of steps:

1. Evaporation of the waste liquors. 2. Burning of these liquors in a spray-type furnace with the production of sodium sulphate, sulphide, sulphite, and carbonate. A large quantity of heat is also liberated in this operation. 3. The coarsely ground ash is mixed with sodium bicarbonate containing about 50% moisture; the bicarbonate must be present in sufficient quantity to supply 2 moles of the bicarbonate for each mole of sulphite. 4. This mixture is heated to 200° C. at atmospheric pressure, so that sodium carbonate is formed and hydrogen sulphide is liberated. This gas is carried to suitable burners where it is converted to sulphur dioxide, which is subsequently required. 5. The incinerated ash of the preceding step is dissolved in water and carbon dioxide is passed into a portion of this solution, so that sufficient bicarbonate is formed for step 3. The solution of carbonate is then sulphited with the product from the burning of the hydrogen sulphide. This process is carried on until the solution is saturated and contains only sodium bisulphite. During this operation, carbon dioxide is driven off and can be used to form the bicarbonate in step 5. If sodium monosulphite is desired, the bisulphite must be neutralized with an aliquot portion of sodium carbonate.

Despite these several proposed methods for the utilization of waste liquors originating from the monosulphite process, Schacht *(34)* was early of the opinion that the process could find no industrial applications unless sodium salts became very cheap. This observation was based on the knowledge that sodium sulphide could be converted only to compounds which were of little or no value in the cooking process. However, the author stated that pulp produced by the neutral sulphite process was of exceptional quality and claimed priority for this method of cooking fibrous materials. He further suggested the possible use of sodium sulphite as a first step in the de Vains chlorination process, in place of the caustic soda commonly employed.

Clark *(35)* confirmed Schacht's observation on waste liquor recovery and stated that recovery in the full Keebra process is impractical because the reused cooking liquor causes a slowing of the pulping action and produces a black pulp. He stated, however, that one American mill, in continuous operation on a Semikeebra process, employed a considerable quantity of caustic soda in the cooking liquor in addition to the sulphite normally present. In this way, it was possible to sulphite only the make-up chemical in the form of soda ash and much difficulty with thiosulphate was avoided; 5% thiosulphate was said to be the maximum allowable concentration. It should be further noted that the waste liquor from any full Keebra cooks can be reused directly in the Semikeebra process, thereby recovering any unused active chemical.

Similar conclusions were reached by Drewsen *(5)*, who admitted the excellence of the pulp but considered the process impractical because of the high chemical cost. He saw no advantage in the Semikeebra process and placed the maximum concentration of thiosulphite at 4%. Further, this substance was characterized as a poison for the cooking liquor and, hence, should be avoided altogether.

The monosulphite process, therefore, is one which yields a very good pulp and has the added advantage that it can be successfully applied to many wood species. Its merits are particularly apparent when applied to resinous woods and hardwoods. The chief drawbacks to further commercial application are the lack of a good recovery system and the high chemical demand, which render the process too costly for general use. Many recovery systems have been proposed, some of which appear to have merit; however, the only one which has withstood the test of time is a cross-recovery process. In this operation the monosulphite liquor is prepared from the green liquor produced in a kraft recovery process, whereas the monosulphite green liquor, rich in sulphite, is used after causticization for the sulphate process.

Experimental

In view of the merits possessed by pulps produced by cooking with sodium monosulphite and the difficulties encountered in maintaining a satisfactory recovery cycle, an analytical study of the recovery process, differentially considering the smelting and sulphiting operations, and a correlation between pulp brightness and liquor constituency, as affected by such processes, was undertaken.

Apparatus

The laboratory study for the smelting operation under conditions closely approximating commercial practice is complicated by the difficulty of obtaining materials for crucible construction capable of withstanding the extreme conditions of temperature and chemical attack imposed. After considering the possibilities offered by various common refractories, metals, and soapstone, graphite was finally selected as the material most suitable for the purpose. Being essentially pure carbon, its use avoids contamination of the melt by foreign inorganic materials; it offers the further advantage of being easily machined on a lathe which facilitates crucible design and fabrication. The

chief objection to graphite is that, on repeated use, even though surface erosion is surprisingly small, the walls become porous to the fused salts. This situation was materially improved by the use of a more impervious form, sold under the name of "Graphitar." Covered crucibles were so constructed as to allow the controlled passage of carbon dioxide gas, serving as the combustion medium, into the melt and escape of the gaseous combustion products, the incorporation of a thermocouple as a means of measuring temperatures in the smelting area, and the final drainage of the molten salts through a tap hole in the bottom. The crucible was heated in an electric furnace (Hoskins, FD-104 type), which was modified to permit dumping of the fused melt. The furnace, with a hole drilled in the bottom and fitted with a sillimanite tube wound with an auxilliary heating coil, was supported in such a way that the melt could be drained, without freezing, from the crucible through the tap hole and heated tube into a dissolving tank placed under the furnace. The dissolving tank was constructed from thin sheet metal coated with a chlororubber paint which admirably withstood chemical attack. The tank was fitted with a cover designed to allow the introduction of the smelt, the insertion of a motor-driven stirrer to minimize local overheating, and the escape of gases through baffled vents. It was found necessary to pass air through ducts leading to the heating element of the furnace during heating to prolong its life, which was seriously reduced because of permeation of the deleterious reducing atmosphere produced in the smelting process. Adequate precautions had to be taken to protect the thermocouple from similar attack. Erosion of the graphite crucible was minimized by passing nitrogen through the drainage tube to replace the natural atmospheric draft.

Experimental Methods

In the initial preparation of monosulphite cooking liquor, the obvious objective is to achieve maximum conversion of chemical to monosulphite, representing a condition characterized by a proper pH (about 8 to 8.5) and a minimum quantity of bicarbonate. If sulphur dioxide is passed into a solution of pure sodium carbonate until the desired pH is reached, the reaction is represented by the equation:

$$2\ Na_2CO_3 + SO_2 + H_2O \rightarrow Na_2SO_3 + 2\ NaHCO_3$$

In practice, a more favorable conversion of chemical is achieved by trickling the solution through a packed tower, in which sulphur dioxide is ascending, so that the solution leaving the tower has a pH of approximately 4; this solution is returned to the original solution until the pH is 8 to 8.5. The stepwise reactions involved and the net result may be represented by the following equations:

$$Na_2CO_3 + 2\ SO_2 + H_2O \rightarrow 2\ NaHSO_3 + CO_2$$
$$2\ Na_2CO_3 + 2\ NaHSO_3 \rightarrow 2\ Na_2SO_3 + 2\ NaHCO_3$$
$$3\ Na_2CO_3 + 2\ SO_2 + H_2O \rightarrow 2\ Na_2SO_3 + 2\ NaHCO_3 + CO_2$$

If the liquor produced in the tower is not returned to the original solution but is collected in a separate container and subsequently neutralized by addition of the original alkaline solution, the bicarbonate content of the final liquor may be materially reduced through evolution of carbon dioxide. Although a tower was not used in the laboratory, the same effect was achieved. An aliquot of the alkaline liquor was brought to a pH of 4 by bubbling sulphur dioxide into the solution; this was subsequently neutralized by the addition of the remaining solution, with final adjustment of the pH to 8.3. In all cases where sulphitation was carried out, this procedure was followed, regardless of the composition of the original liquor.

The experimental cooks were carried out in stainless-steel autoclaves (capacity, 6 liters) which were heated in individual wax baths. The conditions for the base cooks were: 30% active chemical (sodium sulphite as sodium oxide) on the basis of the moisture-free weight of the wood, a 6:1 water ratio, and a heating schedule of 1.5 hours to a maximum temperature of 180° C. and 6 hours at that temperature; these conditions gave very satisfactory pulps. The same conditions were maintained in other cooks, except for variations in the chemical addition and the time at maximum temperature. In all cases, the processing of the cooked chips—including freeing from liquor, disintegration, washing, formation into brightness sheets, etc.—was carried out under uniform conditions.

The waste liquor, combined with the first two washings from the pulp, was concentrated to about 50% solids by vacuum distillation and the product was dried in an oven at 125° C. for about 24 hours to a hard vitreous mass which, being brittle, could be pulverized easily. A weighed quantity of the dried solids was charged into the smelting crucible, which was placed in the furnace; the temperature was raised to 700° C., as indicated by the thermocouple; at the same time, a very slow stream of carbon dioxide was passed through the system to prevent the plugging of the gas-introduction tube. After the desired temperature was reached, the rate of gas passage was increased to approximately 12 cubic feet per hour. The total volume of gas introduced was determined roughly by calculation of the stoichiometric quantity required for the combustion of the solids, on the assumption that they consisted of pure carbon. This volume was recorded by means of a Sargent wet-test meter. Because of the actual wide deviation from a pure carbon composition, this method insured an excess of combustion medium. The maximum temperature reached in the smelting operation was approximately 1000° C. Carbon dioxide, rather than air, was chosen as the oxidation medium in order to conform more closely with the conditions actually present in the industrial recovery process. Although air is forced into the commercial unit, the oxidizing zone where the product is carbon dioxide is small, the remainder being a reducing zone in which carbon monoxide is the chief compound present.

At the conclusion of the smelting operation, the molten material was allowed to drain slowly into the dissolving tank containing the requisite volume of water.

The analysis of the white and green liquors was carried out in principle according to TAPPI Standard T 624 m. The presence of large amounts of sulphite in the white liquors and the absence of sodium hydroxide concurrent with the existence of bicarboate necessitated certain changes in technique and in the calculation and interpretation of results, since the method relates specifically to ordinary kraft liquors. In the case of high sulphite content, care must be taken, in the removal of sulphite from the solution with zinc carbonate suspension in the course of differentially determining by iodometric titration the respective sulphide, sulphite, and thiosulphate contents, that no free zinc ions are present—i. e., that there is an excess of carbonate in the zinc carbonate suspension. Otherwise, zinc sulphite is precipitated with the sulphide. The bicarbonate content of the

white liquors was calculated from the determination of total alkali by subtracting the proper sulphide and sulphite equivalents as separately determined iodometrically. By the use of furfural in the titration medium, a valid result is thereby obtained if the liquor is originally adjusted to a pH of 8.3, where it may be safetly assumed that the constituents in question are present, respectively, entirely as bisulphide, bicarbonate, and the normal sulphite, each mole of either representing one equivalent on titration to the methyl orange endpoint. It is to be borne in mind that the determination of bicarbonate by this indirect method, depending as it does on the separate determination of other constituents also involving a certain indirection, is subject to the possibility of cumulative errors, which tend to render it less reliable than that of other constituents. This consideration likewise applies to the determination of sodium carbonate in the green liquors.

Composition of Green Liquors

During the smelting of the monosulphite waste liquor solids, the sulphur compounds (inorganic and organic) are subjected to a reduction at the high temperature because of the presence of carbonaceous materials. The chief products of such fusion are sodium sulphide and sodium carbonate. Other constituents are formed in much smaller amounts. The relative quantities of these products were found to vary somewhat in a series of green liquors. However, when duplicate fusions were made on the same lot of waste liquor, analytical results showed a very close compositional agreement. Because of the possibility of the presence of unknown compounds which might not be accounted for by the analytical methods employed, sulphur and sodium balances were made on the green liquor obtained by fusion of the waste liquor solids from cook 101. The analytical results, together with the values obtained for the individual components calculated and expressed both in terms of sulphur and sodium oxide, are shown in Table I.

TABLE I.—SODIUM AND SULPHUR BALANCES ON GREEN LIQUOR

	Sulphur g./l.	Sodium as Sodium Oxide g./l.
Sodium sulphide	26.3	50.9
Sodium thiosulphate	3.1	3.0
Sodium sulphate	0.9	1.7
Sodium sulphite	0.0	0.0
Sodium carbonate	...	53.9
Total *	30.3	109.5
Total **	31.1	115.5

* By summation of individual analyses.
** Found by direct determination.

The agreement shown by the balances amount to about 2.5% in the case of the sulphur and to about 5% in the case of the sodium. The discrepancies may be regarded as within the experimental error. The greater inconsistency in the sodium balance is to be expected in light of the uncertainties attending the determination of sodium carbonate. On the basis of these results and this interpretation, there is no reason to believe that there are other compounds present than those accounted for by the analysis.

Sulphiting Reactions

Although it is shown by the above results that the green liquors dealt with in this work contain minor quantities of other constituents, for purposes of theoretical discussion of the sulphiting reaction they may be regarded as containing only sulphide and carbonate. The reaction between sulphur dioxide and solutions rich in sulphide is known to lead to a series of complex reactions. As sulphur dioxide is led into the solution, with consequent decrease in alkalinity, a turbidity of free sulphur is apparent, signifying a reaction between the two constituents presumably according to the equation:

$$2\ Na_2S + 3\ SO_2 \longrightarrow 2\ Na_2S_2O_3 + S$$

Because of the presence of carbonate, sodium sulphite is formed simultaneously, leading to the resolution of the free sulphur. The over-all reaction may be represented as follows:

$$2\ Na_2S + 2\ Na_2CO_3 + 4\ SO_2 + H_2O \longrightarrow 3\ Na_2S_2O_3 + 2\ NaHCO_3$$

When all of the sulphide has been converted in this manner, the solution again becomes crystal clear at a point closely approaching neutrality. With further addition of sulphur dioxide, the solution becomes acidic and assumes a yellow color, which is said to be indicative of an intermediate complex arising from the interaction of thiosulphate and sulphur dioxide, and influential in the conversion of thiosulphate into trithionate. Higher thionates are not formed in quantity because of their reversion to trithionate through reaction with bisulphite. Consequently, at a pH of 4, where the admission of sulphur dioxide is stopped, the solution contains sodium bisulphite, sodium trithionate, and a certain equilibrium concentration of sodium thiosulphate. When this solution is neutralized with the liquor aliquot, which contains sulphide and carbonate, the trithionate is broken down by reaction with sulphide to form thiosulphate:

$$Na_2S_3O_6 + Na_2S \longrightarrow 2\ Na_2S_2O_3$$

If insufficient sulphide were added, this reaction could not proceed to completion and other products would be present in the resulting white liquor. However, in the experimental work, it was found that a definite (though relatively small) excess of sulphide was always present if equal aliquot portions of the same starting liquor were used.

Composition of White Liquors

Predictions which may be drawn relative to the composition of the recovered white liquors on the basis of the above theoretical considerations were, in general, confirmed by analysis. The white liquors subsequently used in cooks 101 and 102, prepared by sulphiting, respectively, a solution containing pure sodium sulphide and sodium carbonate and the recovered green liquor from cook 101, were analyzed and sulphur balances determined. The results are shown in Table II.

In these examples, the discrepancy in the sulphur balances is again about 2.5% in one case and that in the sodium balances is again about 5% in either case. This similarity in results, occurring independently of the type of liquor involved, would seem to support the belief that the discrepancies in balances arise from inaccuracies inherent in the analyses rather than

TABLE II.—SODIUM AND SULPHUR BALANCES ON WHITE LIQUORS

	Cook 101		Cook 102	
	S, g./l.	Na_2O, g./l.	S, g./l.	Na_2O, g./l.
Sodium sulphite	27.4	53.1	42.3	82.0
Sodium thiosulphate	31.6	30.6	48.5	47.0
Sodium sulphide	1.1	2.0	2.2	4.3
Sodium sulphate	1.1	2.1	2.7	5.2
Sodium bicarbonate	...	11.1	...	10.7
Total *	61.2	98.9	95.7	149.2
Total **	62.0	105.3	97.9	156.0

* By summation of individual balances.
** Found by direct determination.

from the presence of materials other than those specifically determined. However, the possibility is not excluded that very minor quantities of such unidentified materials are present. If so, the analytical methods immediately available are incapable of their detection and estimation.

Effect of Liquor Composition on Pulp Quality

A preliminary series of cooks was made in which the initial reducing capacity of the liquor (as measured iodometrically) was the same (5.806 equivalents per 600-gram charge of wood), whereas the proportions of the principal reducing constituents—e. g., sodium sulphite and sodium thiosulphate—and, consequently, the total chemical varied widely. The cooking liquors were prepared by sulphiting solutions of C. P. chemicals—e. g., sodium carbonate and mixtures thereof with sodium sulphide. The results of these cooks are given in Table III, where the thiosulphate but not the complementary sulphite content at the beginning of the cooks is listed.

TABLE III.—PULPING WITH LIQUORS OF EQUAL REDUCING CAPACITY AND VARIABLE MONOSULPHITE CONTENT

Cook	1	2	3
Sodium thiosulphate, g.	...	178	218
Brightness, %	44.4	38.9	30.2
Unscreened yield, %	44.4	46.3	49.1
Permanganate number	23.1	31.6	34.3

The above results indicate that total reducing capacity (as measured iodometrically) is not a valid measure of the pulping efficiency of the liquor. The degree of pulping, as indicated both by the yield and the permanganate number, decreases, as does the brightness, with increasing quantity and proportion of thiosulphate and, consequently, with decreasing quantity and proportion of sulphite in the cooking liquor. Although, for these experiments, a plot of brightness vs. yield shows a linear relationship, suggesting that the decreased brightness was caused simply by incomplete

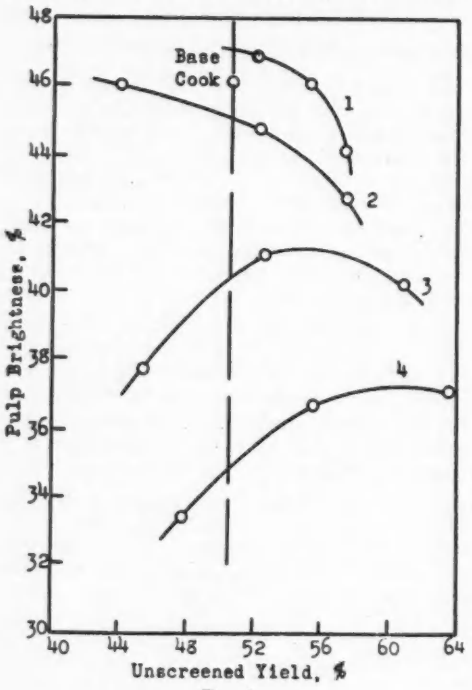


FIG. 1
Relation of Thiosulphate Yield to Brightness Curves 1-4—Series A-D, respectively

pulping—i. e., lignin removal—there is a second factor to be considered—namely, discoloration specifically attributable to the cooking chemicals.

In order to characterize more precisely the effect of thiosulphate, a second series of cooks was made in which a normal base demand of monosulphite was invariably present and, in addition, variable quantities of thiosulphate were also present. Corresponding to each thiosulphate content, a group of three cooks was made in which the time at maximum temperature was varied. This was done to obtain a spread in pulp quality which would allow an interpolation to a fixed yield for the comparison of the pulping characteristics of the different chemical mixtures. The liquors in this series were prepared from C. P. sodium monosulphite and sodium thiosulphate and adjusted to the requisite pH by introduction of carbon dioxide. The results are given in Table IV, in which the thiosulphate contents are expressed as a percentage of the invariant sulphite content, which was 30% of the moisture-free weight of the wood (all percentages are calculated as sodium oxide).

TABLE IV.—PULPING WITH LIQUORS OF EQUAL SULPHITE AND VARIABLE THIOSULPHATE CONTENTS

Series	Thiosulphate %	Cooking Time hr.	Yield %	Brightness %	Permanganate Number
Base Cook	0	6	50.5	46.3	30.3
1	13.9	4	58.5	44.5	36.6
		5	55.0	47.3	36.0
		6	52.0	47.8	29.5
2	42.2	4	58.3	42.6	35.9
		6	51.7	45.0	32.6
		8	46.3	45.8	23.0
3	82.3	4	61.0	40.3	37.2
		6	52.3	40.6	34.0
		8	47.3	38.4	27.6
4	118	4	63.8	37.6	37.1
		6	56.2	37.1	35.5
		8	48.4	33.7	29.5

If the brightness is plotted against the unscreened yield and if smooth curves are drawn through points corresponding to the same liquor (Fig. 1), it is apparent that, at a given low thiosulphate content, the expected trend of decreasing brightness with increasing yield is manifest. At higher thiosulphate concentrations, however, the curves show maxima, to the left of which a reverse trend occurs. This effect can be explained in the light of the observation of Aronovosky *(36)* that, with more complete pulping, the pulp obtained with sodium thiosulphate becomes progressively darker in color. Evidently the inflection point on those curves representing high concentrations of thiosulphate is that at which the pulping action of that compound becomes effective. From this standpoint, it may be concluded that, in the concentration range studied, the monosulphite reacts with the wood before the thiosulphate and that its action leads to an increase in pulp brightness with increased pulping. On the other hand, thiosulphate does not react with wood as readily and eventual reaction causes a dulling of the pulp. From the evidence it seems likely, in accordance with mass action principles, that there is a definite concentration ratio between these two chemicals at which the thiosulphate reacts sufficiently to produce a marked change in the resultant pulps. Consequently, where a constant amount of sulphite is present with varying amounts of thiosulphate, less sulphite need react with the wood to achieve this ratio with increasing concentration of thiosulphate. As a result, the point at which thiosulphate pulping becomes predominant, as indicated by the maximum in the yield vs. brightness curve, occurs at increasingly high pulp yields. Similar curves representing the brightness-permanganate number relationship al-

low the same conclusions and interpretations. The intersections of the vertical line shown in Fig. 1 with the respective curves represent the brightness values which would be exhibited by pulps cooked to the same yield as the reference pulp, using liquors of the given concentrations. The time at maximum temperature required to reach that point could be obtained in a similar manner from other curves, as could the time and brightness corresponding to the standard permanganate number. The values thus derived are shown in Table V.

Except for the unexplained slight increase in brightness over the base cook of the pulp obtained with liquor containing approximately 14% of thiosulphate, the pulp brightness decreases with increasing concentration of thiosulphate. The results also show that the pulping reaction was retarded by increasing quantities of thiosulphate, even though a constant and adequate amount of monosulphite was present. A probable explanation for this involves the postulation

TABLE V.—PULP BRIGHTNESS AT CONSTANT PULP QUALITY AND TIME REQUIRED TO ATTAIN THIS QUALITY

Thiosulphate %	At Constant Yield: Brightness %	At Constant Yield: Time hr.	At Constant Permanganate No.: Brightness %	At Constant Permanganate No.: Time hr.
0	46.3	6	46.3	6
13.9	47.8	6.5	47.7	5.8
42.2	45.3	6.4	45.6	6.4
82.3	40.0	6.7	40.6	7.1
118.0	35.0	7.4	34.3	7.7

that, when the liquor penetrates the chips, the thiosulphate and sulphite enter simultaneously; however, the sulphite reacts rapidly, leaving a proportionally high concentration of the slower acting thiosulphate which tends to retard further penetration of sulphite. This contention is supported by visual observation of the pulped chips. Those cooked with liquors of high thiosulphate concentration had hard uncooked centers which were very dark in color, whereas cooks made for the same length of time, but in which the thiosulphate was not present, gave chips which were homogeneous throughout.

Effect of Smelting and Sulphiting Operations

With the delineation of the specific pulping characteristics of sodium thiosulphate, the consideration of other factors involved in the pulping of wood with recovered liquors was undertaken. A series of experiments were designed to differentially identify the variation in pulp quality with the smelting and sulphiting operations, respectively. Because the proper evaluation of the influence of these processes depends on the accurate characterization and control of liquor composition, all possible precautions were taken to eliminate variations arising from that source. The liquors used in the base and control cooks were made up from reagent grade chemicals—i.e., sodium monosulphite and sodium thiosulphate. In both cases the pH was adjusted to the proper value by the introduction of carbon dioxide. No sulphiting or recovery process was involved in either case. The liquor for cook 101 was prepared by sulphiting a sulphide-carbonate solution prepared from pure chemicals; that for cook 102 was prepared by sulphiting the recovered chemicals from cook 101 after proper adjustment, by addition of reagent sodium carbonate, to similate the original sulphide-carbonate solution. The data for this series of cooks are given in Table VI.

The results show a very pronounced decrease in pulp brightness associated with the sulphiting process which is quite independent of the presence of thiosulphate and indeed, is of a much greater magnitude than any effect of that constituent observed in the previous experiments. The dulling effect seems to be specifically associated primarily with the sulphiting operation rather than with the smelting process because the effect of the latter, as represented by the difference between cooks 101 and 102, is relatively small. Since the most obvious difference in liquor composition associated with the sulphiting operation in the above experiments was the presence of sulphide, a series of cooks were designed to determine the specific effect of this component on pulp brightness when present with thiosulphate and sulphite in amounts and under conditions comparable with those existing in cooks 101 and 102. The liquors were prepared from reagent grade chemicals without sulphitation. The data for the cooks appear in Table VII.

TABLE VI.—EFFECT ON PULP QUALITY OF SMELTING AND SULPHITING OPERATIONS

Cook	Liquor Composition by Analysis (grams as sodium oxide per digester charge): Thiosulphate	Sulphide	Sulphite	Yield %	Brightness %	Permanganate Number
Base	....	..	180	50.5	46.3	30.3
Control	99	..	180	52.0	41.6	32.6
101	103	9.4	180	52.8	27.5	33.8
102	103.8	6.9	180	54.1	26.3	36.5

TABLE VII.—EFFECT OF SULPHIDE ADDITION

Cook	Liquor Composition (grams as sodium oxide per digester charge): Thiosulphate	Sulphite	Sulphide	Yield %	Brightness %
201	98	180	5	49.5	39.9
202	98	180	10	50.4	39.8
203	98	180	15	50.2	37.1

These results show that the presence of sulphide in the amounts indicated has very little effect. The brightness decreased somewhat with increasing sulphide addition but the changes were very slight in comparison with the effects evidenced in cooks 101 and 102. As a check on the presence of extraneous materials which might cause the dulling effects or which might furnish clues as to its origin, the pulps in Table VI were analyzed for ash, total sulphur, and iron. The results were negative, inasmuch as no significant trend or difference was obtained.

Conclusions

It is to be concluded from these experiments that there is a pronounced dulling of pulp associated with the recovery process in monosulphite pulping which is not immediately attributable to either the thiosulphate or the sulphide content of the recovered liquors. The effect is more uniquely associated with the sulphiting operation than with the smelting process, in so far as it appears to have its origin in the interaction of sulphide and sulphur dioxide in the presence of carbonate which occurs in the normal course of liquor preparation. The exact component or condition of the liquor responsible for the discoloration remains unidentified. Within experimental error, the total chemical content of the recovered liquors (white or green) is accounted for by the sulphite, sulphide, thiosulphate and carbonate (bicarbonate) contents as analytically determined. There is no evidence that any of these components can be held responsible for discoloration to the full degree observed, although thiosulphate—and sulphide, also—in the presence of sodium sulphite were found to cause relatively minor decreases in brightness under the conditions employed. The iron and sulphur contents of the pulps afforded

no clue as to the cause of the effects. The specific discoloration effect of thiosulphate accompanying its pulping action becomes apparent in monosulphite pulping when a certain thiosulphate-sulphite ratio is reached. Thiosulphate reacts more slowly with wood than monosulphite and its presence retards the pulping action of the latter. As a consequence, in comparisons made at constant cooking time, an exaggerated dulling effect may be assigned to the thiosulphate which, in reality, is caused by less complete lignin removal. It is obvious that, in the case of liquors containing both sulphite and thiosulphate, an iodometric determination of the total reducing power is not a valid measure of the pulping efficiency of the liquor.

Although the dulling of the color of the unbleached pulps is closely associated with the presence of thiosulphate, there is no close relationship apparent between the brightness of the pulps and their bleachability as indicated by the permanganate numbers. The color produced by the presence of thiosulphate and sulphide seems to be very susceptible to oxidation and any impairment in the production of bleached pulp would be caused only by a decrease in the pulping action as indicated by the higher yield and lack of uniformity. In fact, series 2 of Table IV indicates that there may be benefits from the presence of small amounts of thiosulphate.

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Gives Pine Seedlings To Farmers

The state forest service and the Clemson college extension service of South Carolina announce that three seedlings to the number of 1,550,000 will be distributed free to farmers in South Carolina. These seedlings are being purchased by the Southern Kraft division of the International Paper Company at Georgetown, S. C.; the Champion Paper and Fibre Company at Canton, N. C., and the Union Bag and Paper Company, Savannah, Ga. They purchased 1,000,000; 400,000 and 150,000, respectively.

This is the third consecutive year in which seedlings have been given to the farmers of South Carolina by the pulp mills. The program was initiated in 1942 by the Southern Kraft division of the International Paper Company in which year they gave away 1,388,000 seedlings. The following year, the Champion Paper and Fibre Company and the Union Bag and Paper Company joined the program and contributed sufficient seedlings to make a total of 1,500,000 given by all three companies.

Orders for these seedlings will be taken by the county agricultural agents; and the seedlings will be delivered to central points in each county, from which they will be given to the farmers requesting them. In order for an applicant to obtain seedlings, he must own and live on his farm, must have available labor for planting, and must plant seedlings in solid areas on land that is intended that seedlings must grow. Not less than 1,000 nor more than 5,000 seedlings will be given to any landowner, thus enabling a farmer to plant from one to five acres of land with a profitable crop.

The seedlings are being purchased from the Horace L. Tilghman State Forest nursery at Sumter and will consist of loblolly and slash pine.

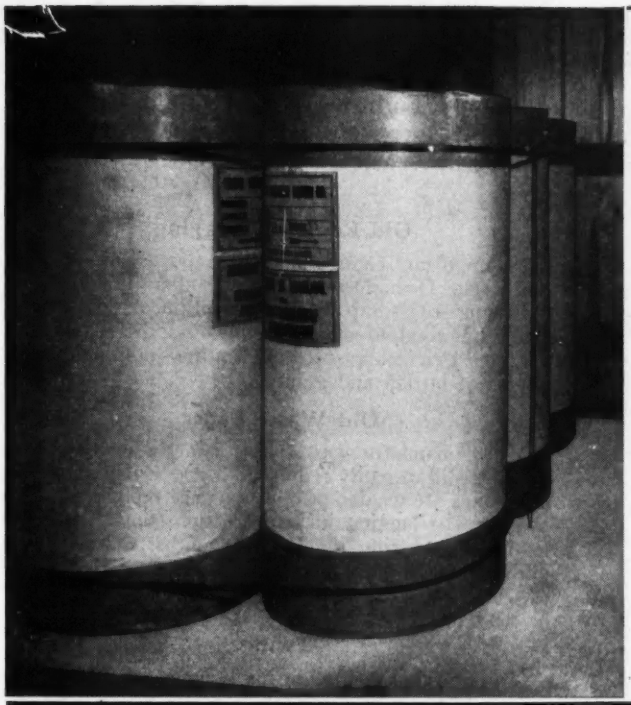
Frank William Harrison Dead

Frank William Harrison, age 47, son of H. F. Harrison, died suddenly on Saturday morning, December 2, 1944, at his father's home, 274 Anderson street, Hackensack, N. J. He had formerly been connected with the paper business but went into the U. S. Army right after Pearl Harbor and was later honorably discharged because of his age. He subsequently joined the U. S. Merchant Marine and served for about two years as Third Officer. His father, H. F. Harrison, for many years the sales manager of the West Virginia Pulp and Paper Company, is now a vice-president and director, and has been connected with that organization for more than fifty years.

Geo. Mann & Co. Buy Stoneham Plant

George Mann & Co., Inc. of Providence, R. I., well known New England heavy chemical merchants, announce the acquisition of the plant and property of the Hercules Powder Company at Stoneham, Mass., effective December 1, 1944.

Complete stocks of heavy chemicals will be maintained and distributed from this new plant, in addition to their service from Providence. Sales will be under the direction of Donald C. Knapp, who has been associated with the company for twenty years. It is expected that the present Boston Office of George Mann & Co., Inc. will be moved to the Stoneham plant about January 1, 1945.



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New York Paper and Pulp Market Review

Paper and Paper Board Supply Situation Is Tight — Wood Pulp Supply Is Extremely Tight With No Relief Expected For Months —Cotton Cutting Active—Mill Demand For Waste Paper Urgent.

Office of the PAPER TRADE JOURNAL,
Wednesday, December 6, 1944.

Wholesale demand for paper is so high in relation to supply that concern continues to be reported over the increasing difficulty of supplying customer's requirements. Current reports from most manufacturers' representatives, jobbers, and general paper merchants, reflect an appeciation of the acute supply situation; that the war in Europe is at so critical a state that all resources must be utilized to win victory at the earliest date. Much more paper and civilian goods are urgently needed to support the national economy, but there appears little prospect of substantial relief from many shortages until the war in Europe is nearer its conclusion.

The index of general business activity for the week ended November 25 rose to 144.6, from 142.3 for the preceding week, compared with 147.2 for the corresponding week last year. Paper board production for the week was 147.7, compared with 153.9 for the preceding week, and with 159.9 for the corresponding week last year.

Paper production for the week ended November 25 was estimated at 90.3%, compared with 87.6% for 1943, with 82.3% for 1942, with 107.7% for 1941, and with 84.4% for the corresponding week for 1940.

Paper board production for the week ended November 25 was 91.0%, compared with 91.0% for 1943, with 77.0% for 1942, with 101.0% for 1941, and with 76.0% for the corresponding week for 1940.

The OPA in amending MPR-182, states that producers of kraft wrapping and bag papers may adjust ceiling prices under two conditions. (1) If existing ceiling prices are the cause of hardship, and (2) continuance of the applicants' output is required to meet military and essential civilian needs. Increases granted manufacturers will be automatically passed on by wholesalers, excepting those items used by wholesalers for packaging purposes. Increases in the costs of retailers resulting from such individual price ceiling adjustments, will be very slight, OPA said.

Wood Pulp

The wood pulp supply situation is extremely tight, a late report of the WPB states, and will probably be somewhat worse during the first quarter of 1945. Diminished imports from Canada were reported due to increased British demands. The only relief U. S. paper board mills can look forward to will be imports of Swedish pulp, but this will not be available until sometime after victory in Europe, the report said.

Rags

Mill demand for new cotton cuttings is currently active. White shirt cuttings are reported particularly active, with heavy demand also reported for khaki. Demand for the unbleached grade is active. Prices are firm at ceiling levels.

Demand for old cotton rags is reported only fair this week. The market is narrow. The roofing grades are moving rather slowly as mills are limiting their purchases. Prices are at ceiling levels.

Old Rope and Bagging

No important change has been reported in old rope this week. Demand for all strong fibers is active.

Buying of scrap bagging continues slow, with trading limited to small volume and the market is narrow. Prices are soft and continue nominal in all grades of burlap and gunny.

Old Waste Paper

Mill demand for waste paper is active, with larger supplies still urgently required. More kraft bag paper and boxes are wanted. Collections are reported by the WPB to be lagging in some sections and are likely to decrease during the winter months, unless every effort is made to maintain or increase current rates of collections. Prices are firm on all grades at ceiling levels.

Twine

No important change in the twine market has been reported this week. Most fibers are in active demand. Prices are firm and continue to be maintained at ceiling levels.

J. C. Thom To Manage Westvaco Sales

Effective November 15, J. C. Thom has been appointed manager of sales of Westvaco Chlorine Products Corporation, New York, N. Y., according to an announcement from Louis Neuberg, vice president. Since August 1943 Mr. Thom has been Westvaco's acting manager of sales succeeding the late J. Rivers Adams.

To Work on Waste Paper Problems

Gladys Swope, formerly of the North Shore Sanitary District, Waukegan, Ill., and secretary of the A.C.S. Division of Water, Sewage and Sanitation Chemistry, is now an industrial fellow at Mellon Institute in Pittsburgh, Pa., working on waste problems of the pulp and paper industries.

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National organization has opening for executive assistant with broad knowledge of coarse paper products and experience in product procurement and sales. Prefer man 30-40 who has contacts with sources of supply. Work will require occasional travel. This permanent position offers appropriate salary and advancement opportunity. Give age, education, employment record, and earnings. Reply held in strict confidence and, if preferred, may be submitted through another person.

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MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, December 6, 1944.

BLANC FIXE—The market for blanc fixe continues steady and unchanged, for the week. Current demand is reported moderate. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is currently quoted at $60 per ton.

BLEACHING POWDER — Current demand is reported good. Supply situation reported satisfactory. Bleaching powder is currently quoted at from $2.50 to $3.10 per 100 pounds. All prices in car lots, in drums, f.o.b. works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 24 cents per pound; 2,000 pounds, 24¼ cents per pound; less than 2,000 pounds, 24¾ cents per pound, f.o.b. shipping point.

CAUSTIC SODA—Supply situation continues tight, with production high and broad demand reported above output. Solid caustic soda is currently quoted at $2.30 per 100 pounds. The flake and ground are currently quoted at $2.70 per 100 pounds. All prices in car lots, in drums, f.o.b. works.

CHINA CLAY—Demand for some grades of china clay is reported fair this week. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mines. Imported china clay is currently quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Production reported excellent. Demand for all uses very heavy; all essential requirements fulfilled. Prices remain unchanged. Chlorine is quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b. works.

ROSIN—Prices are quoted unchanged on most grades of rosin this week: OPA ceiling price on "G" gum rosin is set at $5.79 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $5.75 per 100 pounds in barrels, New York. Seventy per cent gum rosin is currently offered at $6.06 per 100 pounds, f.o.b. works.

SALT CAKE—Demand reported moderate. Quotations on salt cake continue to remain unchanged. Domestic salt cake is currently quoted at $16 per ton.

SODA ASH—Market requirements for soda ash continue very heavy. Production at capacity but manpower shortage delays bagged shipments. Prices continue unchanged. Prices on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Government is reported in market for 400,000 bushels of cash grain. Current receipts light. Starch quotations continue unchanged. Pearl is currently quoted at $3.72 per 100 pounds. The powdered grade is currently quoted at $3.83 per 100 pounds. All prices f.o.b. Chicago.

SULPHATE OF ALUMINA—Supply situation is reported adequate. Quotations are unchanged. Prices on the commercial grades are quoted at from $1.15 to $1.25 per 100 pounds. The iron free is currently quoted at $1.85 per 100 pounds. All prices in car lots, in bags, f.o.b. works.

SULPHUR—Demand is reported steady for sulphur. Quotations on all grades continue unchanged. Annual contracts are currently quoted at $16 per long ton, f.o.b. mines. The current contract prices at Gulf Ports remains unchanged at $17.50 per long ton.

TALC—The market for domestic talc is reported moderately active. Quotations unchanged. Domestic grades are quoted at from $16 to $21 per ton, at mines.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

Standard News, per ton—			
Roll, contract...	*$58.00	@	—
Sheets	66.00	"	—
* OPA Maximum Price.			
Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill			
Superstandard Wrapping ...	*$5.25	@	—
No. 1 Wrapping...	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag.....	*4.375	"	—
* OPA Manufacturers' Prices.			
Tissues—Per Ream—Carlots			
White No. 1.....	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½....	1.00	"	—
White No. 2.....	.90	"	—
Anti-Tarnish M.F..	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Toilet—1 M. Sheets—Per Case			
Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet....	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.....	2.20	"	—
Bleached, Jr.	3.20	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute.....11.25		@	—
No. 1 Manila Wrapping, 35 lb.....	6.00	"	6.25
No. 2 Manila Wrapping, 35 lb.....	5.75	"	6.00
Boards, per ton—			
News *48.00		@	—
Chip *48.00		"	—
Sgl. Mla. Ll. Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*63.00	"	—
Binders Boards...	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
100% Rag Ext. No. 1	$39.10	@	$46.00	$40.25 @ $47.25
100% Rag	32.20 "		37.75	33.35 " 39.25
85% Rag	.... "		....	29.90 " 35.00
75% Rag	23.00 "		27.00	24.15 " 28.25
65% Rag	.... "		....	22.80 " 27.75
50% Rag	18.70 "		22.75	19.90 " 24.25
25% Rag	16.40 "		20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds		Ledgers	
No. 1..	$10.55	@	$12.75	$11.70 @ $14.25
No. 2..	9.65 "		11.75	10.80 " 13.25
No. 3..	9.20 "		11.25	10.35 " 12.50
No. 4..	8.90 "		10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper. Delivered in Zone 1:

No. 1 Glossy Coated...	$13.65	@	$15.50
No. 2 Glossy Coated...	12.40	"	14.00
No. 3 Glossy Coated...	11.60	"	13.25
No. 4 Glossy Coated...	11.15	"	12.75
No. 1 Antique (watermarked)	10.25	"	11.75
No. 2 Offset	9.60	"	11.00
A Grade E. F.....	9.35	"	10.75
A Grade S. & S. C...	9.60	"	11.00
B Grade E. F.	8.85	"	10.25
B Grade S. C.	9.10	"	10.50
C Grade E. F.	8.55	"	9.75
C Grade S. C.	8.80	"	10.00
D Grade E. F.	8.25	"	9.50
D Grade S. & S. C. ..	8.50	"	9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight Not Exceeding OPA Allowances.

Bl. Softwood Sulphite.....	$86.00
Unbl. Softwood Sulphite.....	74.00
Bl. Hardwood Sulphite.....	83.50
Unbl. Hardwood Sulphite.....	71.50
Bl. Mitscherlich	81.00
Unbl. Mitscherlich ..72.00 @	82.00
N. Bleached Sulphate	86.00
S. Bleached Sulphate	79.00
N. Semi-Bleached Sulphate...	82.00
S. Semi Bleached Sulphate...	75.00
N. Unbl. Sulphate.....	73.00
S. Unbl. Sulphate	63.50
Bl. Soda	72.00
Unbl. Soda	68.00
Groundwood	50.00

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area).....	10.50
West Coast (out area).....	16.50

	50%-80% Air Dry Weight
Northeast	11.50
Lake Central	11.50
Southern	14.00
West Coast (in area).....	9.50
West Coast (out area).....	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices.

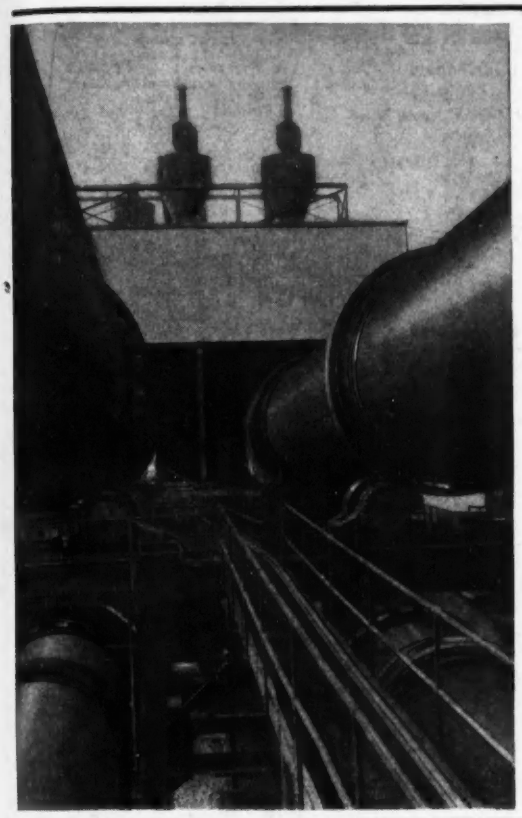
Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1..	6.50	@	7.25*
Silesias No. 1.....	—	"	5.75*
New Unbleached...	6.75	"	7.50*
Blue Overall	—	"	5.50*
Fancy	—	"	3.50*
Washables	—	"	3.00*
Bleached Khaki Cuttings	—	"	4.25*
Unbleached Khaki Cuttings	—	"	3.50*

* OPA Maximum Prices.



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CONTROLLED PARTICLE SIZE AND SETTLING RATES FOR LIME, BY METHOD OF REBURNING AND SLAKING?

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FOR PAPER MILLS

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Since cleaning procedures vary in each mill, our Technical Service Engineer will gladly suggest specific recommendations to best meet your particular conditions. FREE 28-page maintenance booklet contains many helpful money-saving cleaning tips. Write for your copy TODAY!

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Technical Service Representatives in All Principal Cities of the United States and Canada

OAKITE MATERIALS · METHODS · SERVICE — Buy Bonds for Victory — **CLEANING** FOR EVERY CLEANING REQUIREMENT

Old Rags

White, No. 1—
Repacked .....*3.80 @ —
Miscellaneous ....*3.20 @ —
White, No. 2—
Repacked .....*2.90 " —
Miscellaneous ....*2.65 " —
Third and Blues—
Repacked .....*2.20 " —
Miscellaneous ....*1.80 " —
Bagging Rags—
No. 1.....*1.55 @ —
No. 2.....*1.45 @ —
No. 3 (bagging)..*1.35 @ —
No. 4.....*1.35 @ —
No. 5A.....*1.35 @ —
Old Manila Rope.. 5.75 " —
OPA Maximum Prices.

Foreign Rags

All Prices nominal

New Rags

New Dark Cuttings.. 2.25 @ 2.40
New Mixed Cuttings. 2.00 " 2.20
New Light Silesias.. 5.50 " 5.75
Light Flannelettes... 5.50 " 5.75
New White Cuttings. 7.00 " 7.50
New Light Oxfords. 4.00 " 4.50
New Light Prints... 3.00 " 3.25

Old Rags

No. 1 White Linens. 7.50 " 8.50
No. 2 White Linens. 6.50 " 7.50
No. 3 White Linens. 4.50 " —
No. 4 White Linens. 2.25 " 3.25
No. 1 White Cotton. 4.25 " 4.75
No. 2 White Cotton. 3.25 " 3.75
No. 3 White Cotton. 2.50 " 3.00
No. 4 White Cotton. 1.90 " 2.20
Extra Light Prints.. 2.00 " 2.40
Ord. Light Prints... 1.75 " 2.15
Med. Light Prints... 1.55 " 1.95
Dutch Blue Cottons. 2.25 " 2.50
French Blue Linens. 3.00 " —
Checks and Blues... 2.00 " —
Linsey Garments.... 1.90 " 2.00
Dark Cottons..... 1.50 " 1.60
Old Shopperies..... 1.30 " 1.45
New Shopperies..... 1.45 " 1.50
French Blues..... 2.25 " 2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—
Foreign .....Nominal
Domestic ..... 4.25 @ 4.35
Wool Tares, light.... 4.25 " 4.50
Wool Tares heavy... 4.50 " 5.00
Bright Bagging..... 4.50 " 4.85
Manila Rope—
Foreign ..... — " —
Domestic .....*5.75 " —
Jute Threads..... 5.50 " —
No. 1 Sisal Strings..*4.00 " —
Mixed Strings..... 2.00 " —
*OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut ..... 3.37½ @ —
No. 1 Hard White Envelope Cuts.... 3.12½" —
No. 1 Hard White Shavings, unruled. 2.87½" —
No. 1 Hard White Shavings, ruled... 2.50 " —
Soft White Shavings, one cut..... 2.87½" —
No. 1 Soft White Shavings ..... 2.50 " —
Soft White Shavings, Misc. ..... 2.15 " —
No. 1 Fly Leaf Shavings ..... 1.67½" —
No. 2 Fly Leaf Shavings ..... 1.12½" —
No. 1 Groundwood Fly Leaf Shavings 1.25 " —
No. 2 Mixed Groundwood Fly Leaf Shavings ..... .90 " —
Mixed Colored Shavings ..... .75 " —
Mixed Groundwood Colored Shavings.. .90 " —
Overissue Magazines ..... 1.67½" —
No. 1 Heavy Books & Magazines ..... 1.92½" —
Mixed Books..... 1.10 " —
No. 1 White Ledger.. 2.30 " —
No. 2 Mixed Ledger, colored ..... 2.00 " —
New Manila Envelope Cuttings, one cut.. 2.87½" —
New Manila Envelope Cuttings ..... 2.65 " —
Extra Manilas..... 1.95 " —
Mixed Kraft, Env. & Bag Cuttings..... 2.75 " —
Kraft Envelope Cuttings ..... 3.25 " —
Triple Sorted, No. 1 Brown Soft Kraft. 2.50 " —
New 100% Kraft Corrugated Cuttings.. 2.25 " —
No. 1 Assorted Old Kraft ..... 1.75 " —
New Jute Corrugated Cuttings ..... .90 " —
Old 100% Kraft Corrugated Containers 1.75 " —
Old Corrugated Containers ..... 1.40 " —
Box Board Cuttings. .72½" —
White Blank News.. 1.65 " —
Overissue News..... 1.10 " —
No. 1 News..... 1.00 " —
No. 1 Mixed Paper... .95 " —
Old Corrugated Containers ..... .82½" —
Mill Wrappers..... 1.10 " —

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—
India ..... .21 @ —
White Hemp..... .21 " —
Fine Polished—
Fine India..... .26 " —
Unpolished—
Box ..... .17½" —
Paper Makers..... .17 " —
Tube Rope..... .19 " —
Wall Paper..... .20½" —
Wrapping ..... .23 " —
Soft Fiber Rope.... .19 " —
Cotton ..... .25 " —

(Hard Fiber)

Medium Java..... .18 " —
Mex. Sisal..... .16 " —
Manila ..... — " —

PHILADELPHIA

Domestic Rags (New)

(Price to Mill.)

Shirt Cuttings—
New White No. 1..... .07¼
New White No. 2..... .05¾
Light Silesias..... .05¾
Black Silesias, soft..... .03¾
New Unbleached ..... .07½
Washable Prints ..... .04¼
Washable No. 1..... .03
Blue Overall..... .05½
Cottons—According to grades—
Washable shredding ..... .01¾
Fancy Percales ..... .04¼
New Black Soft ..... .03¾
Khaki Cuttings—
Unbleachable Cotton Cuttings .03½
Bleachable Cotton Cuttings.. .04¼
Men's Corduroy ..... .03½
Ladies' Corduroy ..... .03
Cottonades ..... .03¾

Domestic Rags (Old)

White No. 1—Repacked ..... 3.80 @ —
Miscellaneous No. 1. 3.20 " —
Miscellaneous No. 2. 2.65 " —
White No. 2—Repacked ..... 2.90 " —
Thirds and Blues—
Miscellaneous .... 1.80 " —
Repacked ..... 2.20 " —
Black Stockings—
(Export) .....Nominal
Roofing Stock—
Foreign No. 1....Nominal
Domestic No. 1... 1.55 " —
Domestic No. 2... 1.45 " —
Roofing Bagging.. 1.35 " —
Old Manila Rope... 5.75 " —

Bagging

(F. o. b. Phila.)

Gunny No. 1—
Foreign .....Nominal
Domestic ..... 3.00 " 3.50
No. 1 Clean bright—
Sisal Strings ..... .04
No. 2 Clean bright—
Sisal Strings ..... .03
Sisal Jute ..... .02½ " .02¾
Scrap—
No. 1..... 2.25 " 2.50
No. 2..... 1.75 " 1.80
Wool Tares, heavy .. 4.00 " 4.25
No. 1 New Light Burlap ..... 3.00 " 4.00
New Burlap Cuttings 3.75 " 4.00

Old Papers

(F. o. b. Phila)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut ..... 3.37½" —
No. 1 Hard White Shavings, unruled.. 2.87½" —
Soft White Shavings, one cut..... 2.50 " —
White Blank News.. 1.65 " —
Soft White Shavings, Misc. ..... 2.15 " —
No. 1 Fly Leaf Shavings ..... 1.67½" —
No. 2 Fly Leaf Shavings ..... 1.12½" —
No. 1 Groundwood Fly Leaf Shavings 1.25 " —
No. 2 Groundwood Fly Leaf Shavings .90 " —
Mixed Colored Shavings ..... .75 " —
New Manila Envelope Cuts, one cut..... 2.87½" —
Hard White Envelope Cuts, one cut..... 3.37½" —
Triple Sorted No. 1 Brown Soft Kraft. 2.50 " —
Mixed Kraft Env. & Bag Cuttings..... 2.75 " —
Kraft Envelope Cuttings ..... 3.25 " —
No. 1 Heavy Books & Magazines..... 1.92½" —
New Manila Envelope Cuts, one cut..... 2.87½" —
New Manila Envelope Cuttings ..... 2.65 " —
White and Colored Tabulating Cards.. 2.25 " —
Ground Wood Tabulating Cards ..... 1.35 " —
White Blank News.. 1.65 " —
No. 1 Assorted Old Kraft ..... 1.75 " —
No. 1 Mixed Paper... .95 " —
Overissue News..... 1.10 " —
Box Board Cuttings. .72½" —
New Corrugated Cuttings, Kraft..... 2.25 " —
Old 100% Kraft Corrugated Containers 1.75 " —
Old Corrugated Containers ..... 1.40 " —
Jute Corrugated Cuttings ..... 1.07½" —

Bagging

(F. o. b. Boston)

Gunny Bagging—
Foreign .....(nominal)
Domestic ..... — @ 2.50
Sisal Rope No. 1....*4.75 " —
Sisal Rope No. 2....*4.25 " —
Mixed Rope ..... — " 1.55
Transmission Rope—
Foreign .....(nominal)
Domestic ..... 2.75 " 3.00
Manila Rope—
Foreign .....(nominal)
Domestic ..... 5.75 " —
Soft Jute Rope..... 5.25 " —
Jute Car Warp Threads. 3.00 " 3.50
Bleachery Burlap.... 8.50 " 9.00
Scrap Burlap—
Foreign .....(nominal)
Domestic ..... — " 2.75
South American ... — " 3.00

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices, Baled

No. 1 Hard White Shavings, unruled. 2.87½ @ —
No. 1 Hard White Shavings, ruled... 2.50 " —
Soft White Shavings, Misc. ..... 2.15 " —
No. 1 Fly Leaf Shavings ..... 1.67½" —
No. 2 Fly Leaf Shavings ..... 1.12½" —
No. 1 Groundwood Fly Leaf Shavings 1.25 " —
No. 2 Groundwood Fly Leaf Shavings .90 " —
Mixed Colored Shavings ..... .75 " —
New Manila Envelope Cuts, one cut..... 2.87½" —
Hard White Envelope Cuts, one cut..... 3.37½" —
Triple Sorted No. 1 Brown Soft Kraft. 2.50 " —
Mixed Kraft Env. & Bag Cuttings..... 2.75 " —
Kraft Envelope Cuttings ..... 3.25 " —
No. 1 Heavy Books & Magazines..... 1.92½" —
New Manila Envelope Cuts, one cut..... 2.87½" —
New Manila Envelope Cuttings ..... 2.65 " —
White and Colored Tabulating Cards.. 2.25 " —
Ground Wood Tabulating Cards ..... 1.35 " —
White Blank News.. 1.65 " —
No. 1 Assorted Old Kraft ..... 1.75 " —
No. 1 Mixed Paper... .95 " —
Overissue News..... 1.10 " —
Box Board Cuttings. .72½" —
New Corrugated Cuttings, Kraft..... 2.25 " —
Old 100% Kraft Corrugated Containers 1.75 " —
Old Corrugated Containers ..... 1.40 " —
Jute Corrugated Cuttings ..... 1.07½" —

Bagging

(F. o. b. Boston)

Gunny Bagging—
Foreign .....(nominal)
Domestic ..... — @ 2.50
Sisal Rope No. 1....*4.75 " —
Sisal Rope No. 2....*4.25 " —
Mixed Rope ..... — " 1.55
Transmission Rope—
Foreign .....(nominal)
Domestic ..... 2.75 " 3.00
Manila Rope—
Foreign .....(nominal)
Domestic ..... 5.75 " —
Soft Jute Rope..... 5.25 " —
Jute Car Warp Threads. 3.00 " 3.50
Bleachery Burlap.... 8.50 " 9.00
Scrap Burlap—
Foreign .....(nominal)
Domestic ..... — " 2.75
South American ... — " 3.00
Wool Tares—
Foreign .....(nominal)
Domestic ..... 4.25 " —
Aust. Wool Pouches.. — " 3.50
New Zealand Wool Pouches ..... — " 3.50
New Burlap Cuttings 4.75 " 5.00
Heavy Baling Bagging 4.00 " 4.25
Paper Mill Bagging.. 2.50 " 3.00
No. 2 Roofing Bagging 1.35 " —
*OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—
New Light Prints. .04½ @ .04½
Fancy Percales.... .04¼ " .05
New White No 1. .06¾ " .07
New Light Flannelettes ..... .05½" .06
Canton Flannels, Bleached ..... .06 " .06½
Underwear Cutters, Bleached ..... .06¼" .06½
Underwear Cutters, Unbleached ..... .05¼" .06
Silesias No. 1..... .06 " .06½
New Black Silesias.. .03 " .03½
Red Cotton Cuttings .03½" .04
Soft Unbleached ... .06½" .06½
Blue Cheviots .... .05½" .06
Fancy ..... .02¾" —
Washable ..... .02¾" —
Khaki Cuttings .... .02¾" .03
O. D. Khaki..... .03½" .03½
Corduroy ..... .03½" .03½
New Canvas ..... .06¼" .06½
B. V. D. Cuttings... .06¼" .06½

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—
Repacked ..... 3.80 @ —*
Miscellaneous .... 3.20 " —*
White No. 2—
Miscellaneous .... 2.65 " —*
Twos and Blues, Repacked ..... 2.20 " —*
Old Blue Overalls... 2.25 " 2.50
Thirds and Blues, Repacked ..... 2.20 " —*
Miscellaneous ..... 1.80 " —*
Black Stockings .... 3.50 " 4.00
Roofing Stock—
No. 1 ..... 1.55 " —*
No. 2 ..... 1.45 " —*
No. 3 ..... 1.35 " —*
No. 4 ..... 1.35 " —*
No. 5, Quality A.. 1.35 " —*
Quality B.. 1.20 " —*
Quality C.. .95 " —*
* Old Manila Rope.. 5.75 " —
*OPA Maximum Prices.

Foreign Rags

(F. o. b Boston)

Canvas .....(nominal)
Dark Cottons .....(nominal)
Dutch Blues .....(nominal)
New Checks and Blues..(nominal)
Old Fustians .....(nominal)
Old Linsey Garments....(nominal)
New Silesias .....(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices, Baled

Shavings—
No. 1 Hard White Envelope Cuts, one cut ..... 1.37½" —
No. 1 Hard White Shavings, unruled. 2.87½" —
No. 1 Soft White Shavings ..... 2.50 " —
No. 1 White Ledger.. 2.30 " —
No. 1 Heavy Books & Magazines..... 1.92½" —
White Blank News.. 1.65 " —
Mixed Kraft Env. & Bag Cuttings... 2.75 " —
No. 1 Assorted Old Kraft ..... 1.75 " —
Overissue News..... 1.10 " —
No. 1 News..... 1.00 " —
No. 1 Mixed Paper... .95 " —
No. 1 Roofing Rags. 1.55 " —
No. 1 Roofing Bags. 1.45 " —